L-852A-D(L), J(L) & K(L) ITCF, LED In-pavement Taxiway Centerline Light

User Manual

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ADB SAFEGATE

A.0 Disclaimer / Standard Warranty

CE certification

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

ETL certification

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

All Products Guarantee

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

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

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

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

Standard Products Guarantee

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

Note

See your sales order contract for a complete warranty description.

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

FAA Certified products manufactured by ADB SAFEGATE

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

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

Note

See your sales order contract for a complete warranty description.

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

Liability

WARNING

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

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

Unintended uses, includes the following actions:

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

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1.0 Safety

Introduction to Safety

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

1.1 Safety Messages

HAZARD Icons used in the manual

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

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

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

Qualified Personnel

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

1.1.1 Introduction to Safety

CAUTION

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

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

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

Additional Reference Materials

Important Information

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

1.1.2 Intended Use

CAUTION

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

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

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

1.1.3 Material Handling Precautions: Storage

CAUTION

Improper Storage
Store this equipment properly

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

Failure to follow this instruction can result in equipment damage

1.1.4 Material Handling Precautions: Fasteners

DANGER

Foreign Object Damage - FOD
This equipment may contain fasteners that may come loose - torque properly.

- Only use fasteners of the same type as the one originally supplied with the equipment.
- Use of incorrect combination of gaskets, bolts and nuts can create severe damages to the product installation and create safety risk .
- You need to know what base the light fixture will be installed in, in order to chose the correct gasket, bolts and nuts.
- Bolt type, length, and torque value are determined by type of base, height of spacers used, and clamp force required in FAA Engineering Brief No 83 (latest revision).
- Due to the risk of bolts vibrating loose, do not use any type of washer with the fixing bolts (such as split lock washers) other than an anti-vibration washer. Anti-vibration washers as defined in FAA EB 83 (latest edition) must be used. For installations other than FAA, use the base can manufacturer's recommendations.
- Always tighten the fasteners to the recommended torque. Use a calibrated torque wrench and apply the recommended adhesive type.
- Obey the instructions of the adhesives necessary for the fasteners.

Failure to follow these warnings may cause the fasteners to loosen, damage the equipment, potentially to loosen the equipment. This can lead to a highly dangerous situation of FOD, with potential lethal consequences.

Note

To minimize the risk of errors, the ADB SAFEGATE Sales Representative will have information on which gasket goes with which base. This information is also provided in the product Data sheets, the User Manuals and the Spare Part Lists.

CAUTION

Use of incorrect combination of gaskets, bolts and nuts can create severe damages to the product installation and create multiple safety risks.

To obtain a safe and watertight installation the O-ring and retaining bolt stated in the document must be used.

You need to know what base the light fixture will be installed in, in order to choose the correct gasket, bolts and nuts.

Failure to follow these cautions can result in equipment damage or aircraft FOD.

1.1.5 Maintenance Safety

DANGER

Electric Shock Hazard
This equipment may contain electrostatic devices

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

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

1.1.6 Material Handling Precautions, ESD

CAUTION

Electrostatic Sensitive Devices
This equipment may contain electrostatic devices

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

Failure to follow this instruction can result in equipment damage

1.1.7 Arc Flash and Electric Shock Hazard

DANGER

Series Circuits have Hazardous Voltages
This equipment produces high voltages to maintain the specified current - Do NOT Disconnect while energized.

- Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks.
- Only persons who are properly trained and familiar with ADB SAFEGATE equipment are permitted to service this equipment.
- An open airfield current circuit is capable of generating >5000 Vac and may appear OFF to a meter.
- Never unplug a device from a constant current circuit while it is operating; Arc flash may result.
- Disconnect and lock out electrical power.
- Always use safety devices when working on this equipment.
- Follow the recommended maintenance procedures in the product 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 SAFEGATE replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.
- Check the 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 airfield electrical equipment.

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

2.0 ITCF LED Light

ITCF-L LED Taxiway Centerline Light. The ITCF-L operates on both 3-step and 5-step CCRs and can be powered with any CCR architecture type. When quartz-incandescent fixtures are replaced with LED fixtures, airport staff can add more lights without increasing CCR size.

2.1 About this manual

The manual shows the information necessary to:

- Install and maintain the L-852A-D(L), J(L) & K(L) ITCF, LED Taxiway Centerline Light.

How to work with the manual

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

3.0 Introduction

L-852A-D (L)

L-852J/K (L)

3.1 LED In-pavement Taxiway Centerline Light

Compliance with Standards

FAA:	Designed according to L-852(L) Series AC 150/5345-46 (Current Edition) and the FAA Engineering Brief No. 67. ETL Certified.

Uses

FAA L-852A(L)
- Taxiway centerline on straight sections and clearance bar in category I and II applications, ≥1,200 ft RVR

FAA L-852B(L)
- Taxiway centerline on curved sections in category I and II applications, ≥1,200 ft RVR

FAA L-852C(L)
- Taxiway centerline on straight section and clearance bar in category III applications, <1,200 ft RVR

FAA L-852D(L)
- Taxiway centerline on curved sections in category III applications, <1,200 ft RVR
- White/white or white/yellow used on MIRL runway edge for intersections where runway edge spacing >400 ft (122 m)

FAA L-852J(L)
- Taxiway centerline on curved sections in category I and II applications, ≥1,200 ft RVR

FAA L-852K(L)
- Taxiway centerline on curved sections in category III applications, <1,200 ft RVR

Use of two LED modules allows the option of separate control of each module in bi-directional applications.

Power Supply

ITCF LED F-Range fixture is designed to work with any IEC- or FAA-compliant transformer up to 100 W without affecting the performance or lifetime of the light fixture or transformer. See data sheet 3033 for more details on recommended isolation transformers specified below.

ITCF-L Fixture	Fixture Load [1]	Isolation Transformer	Primary (CCR) Load
L-852D(L), L-852K(L)			
Unidirectional w/out heater	21 VA	20/25 W	29 VA
Bidirectional w/out heater [2]	27 VA	30/45 W	35 VA
Bidirectional w/out heater [3]	25 VA per side (50 VA total)	20/25 W per side	33 VA per side (66 VA total)
Unidirectional with heater	56 VA	65 W	69 VA
Bidirectional with heater [2]	58 VA	65 W	71 VA
Bidirectional with heater [3]	45 VA per side (90 VA total)	30/45 W per side	54 VA per side (108 VA total)

ITCF-L Fixture	Fixture Load [1]	Isolation Transformer	Primary (CCR) Load

Notes
1 Fixture load does not include isolation transformer load
2 One cord set
3 One cord set per side (2 total)

ITCF-L Fixture	Fixture Load [1]	Isolation Transformer	Primary (CCR) Load
L-852B(L), L-852C(L)			
Unidirectional w/out heater	14 VA	10/15 W	19 VA
Bidirectional w/out heater [2]	17 VA	20/25 W	22 VA
Bidirectional w/out heater [3]	14 VA per side (28 VA total)	10/15 W per side	19 VA per side (38 VA total)
Unidirectional with heater	46 VA	30/45 W	55 VA
Bidirectional with heater [2]	56 VA	65 W	69 VA
Bidirectional with heater [3]	34 VA per side (68 VA total)	30/45 W per side	43 VA per side (86 VA total)

Notes
1 Fixture load does not include isolation transformer load
2 One cord set
3 One cord set per side (2 total)

ITCF-L Fixture	Fixture Load [1]	Isolation Transformer	Primary (CCR) Load
L-852A(L), L-852J(L)			
Unidirectional w/out heater	8 VA	10/15 W	16 VA
Bidirectional w/out heater [2]	9 VA	10/15 W	17 VA
Bidirectional w/out heater [3]	8 VA per side (16 VA total)	10/15 W per side	16 VA per side (32 VA total)
Unidirectional with heater	25 VA	30/45 W	33 VA
Bidirectional with heater [2]	43 VA	30/45 W	51 VA
Bidirectional with heater [3]	25 VA per side (50 VA total)	30/45 W per side	33 VA per side (66 VA total)

Notes
1 Fixture load does not include isolation transformer load
2 One cord set
3 One cord set per side (2 total)

3.2 Typical Configuration

F-Range in-pavement light fixtures are available in unidirectional, standard bidirectional and switchable bidirectional, and are designed to provide visual guidance along the taxiway centerlines. (see Figure 2).

The light fixtures are manufactured in accordance with FAA specification AC 150/5345-46 (current edition), Style 3: ≤ 1/4 in. (6.35mm) height above grade.

The ICAO straight and curved fixture is designed to be in compliance with ICAO Annex 14.

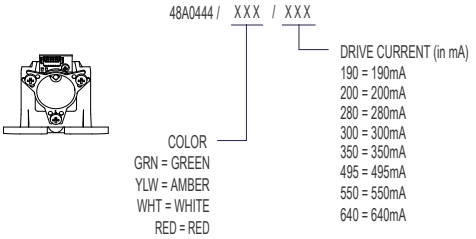
Figure 2: View of LED In-Pavement ITCF Light Fixture (Typical Configuration)

3.2.1 Inner Pan Sub-assembly

The inner cover assembly includes the inner cover, L-823 cord sets, and the power supply, as shown in Figure 2.

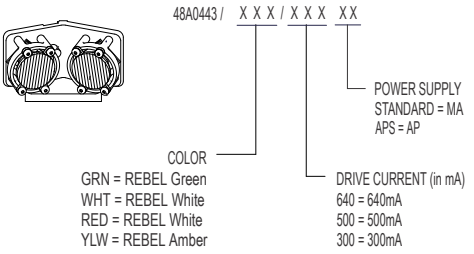
3.2.2 Optical Unit L852A(L), B(L), C(L), J(L) and ICAO Straight

Figure 3: Optical Unit 48A0444-XXX-XXX



3.2.3 Optical Unit L852D(L) & K(L)

Figure 4: Optical Unit 48A0443-XXX-XXX



4.0 Installation

In-pavement fixtures must be installed according to the plans and specifications; the applicable regulatory guidance; and the manufacturer's instruction manual. For FAA applications, installation guidance is provided in AC 150/5340-30 (current edition).

4.1 Installation Safety Considerations

WARNING

Electric Shock
Read installation instructions in their entirety before starting installation.

- Become familiar with the general safety instructions in this section of the manual before installing, operating, maintaining or repairing this equipment.
- Read and carefully follow the instructions throughout this manual for performing specific tasks and working with specific equipment.
- Follow all applicable safety procedures required by your company, industry standards and government or other regulatory agencies.
- Install all electrical connections to local code.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.

Failure to follow these warnings may result in serious injury or equipment damage.

4.2 Overview of Sequence of Work

- Electrical contractor locates new light bases and interconnecting conduit trench, and excavates for light base bottom section by saw cutting or core drilling. Electrical contractor prepares subgrade and stone subbase, sets bottom section with rebar, rigid steel conduit stubs, drain, and pours high early strength concrete-encasement excavation. Electrical contractor shall record can locations and elevations of mud plate after concrete-encasement.
- Electrical contractor excavates conduit trench, installs rigid steel and fittings, backfills conduit trench with high early strength concrete.
- General contractor prepares and installs concrete pavement. Electrical contractor makes a pilot core to find mud plate center point indent before final core-drilling.
- Electrical contractor core-drills concrete pavement. Electrical contractor installs top section, y-flange ring, space and lighting fixture, and pours epoxy joint sealer. Provide space for adjustment with spacers, maximum number of spacers shall be 3.
- See specific details as shown in FAA AC 150/5340-30 (current edition).

4.3 Installation Procedures

CAUTION

Read installation instructions in their entirety before starting installation.

- Become familiar with the general safety instructions in this section of the manual before installing, operating, maintaining or repairing this equipment.
- Read and carefully follow the instructions throughout this manual for performing specific tasks and working with specific equipment.
- Failure to follow these warnings may result in serious injury or equipment damage.

In-pavement fixtures must be installed according to the plans and specifications; the applicable regulatory guidance; and the manufacturer's instruction manual. For FAA applications, installation guidance is provided in AC 150/5340-30 (current edition).

Following are a number of items to be aware of:

www.adbsafegate.com

www.faa.gov/airports/engineering/engineering_briefs

faa.gov/airports/resources/advisory_circulars

4.4 Mechanical Requirements

- Correct dimensional placement of the lights is of prime importance. To achieve this, careful attention to detail is required. Survey instruments may be used to accurately position all fixtures for their precise location, elevation, and azimuth. The tolerances required in FAA AC 150/5340-30, and the plans, must not be exceeded. The light beam must be aligned as described in FAA AC 150/5340-30 with a horizontal tolerance of ±1 degree. The light fixture must be level, and the top outside edge of the fixture must be between +0 inch and -1/16 inch (1.5875 mm) with respect to the surrounding pavement. See FAA AC 150/5340-30, Chapter 11, *Fixture Mounting Bases*, for additional guidance on installing Light Bases. Incorrect installation may cause the light output to appear to be too dim or too bright. Incorrect installation may also increase the risk for fixture mechanical failures.
- Insure all base can mounting surfaces are free of dust, dirt or debris. Per FAA AC 150/5340-30, Chapter 10, and FAA Engineering Brief No 83 (latest revision), the fixture *must* be mounted using properly installed anti-vibration lock washers under the mounting bolts. An anti-vibration lock washer is composed of a pair of unique washers with radial teeth that grip and seat the mating surfaces. The rise of the cams between the face of washers is greater than the pitch of the bolt. This creates tension that positively locks the bolt. Use extreme care when placing the two halves of the lock washer together. The cams (or steps) of each half of the lock washer must face each other.

Cams (or steps) of the lock-washer must face each other

- Per FAA AC 150/5340-30, Chapter 10, and FAA Engineering Brief No 83 (latest revision), it is extremely important that other types of washers, such as split washers, must not be used. Failure to use properly installed anti-vibration lock washers will cause mounting bolts to become loose. Loose bolts increase the risk for fixture mechanical failures. Loose bolts can also increase fixture slippage which increases the shear load on the bolts. This can cause individual bolt failure, resulting in increased load on the remaining bolts. Finally, this can result in an increased risk that bolts come out or shear-off, causing the bolt and fixture to become FOD on the Runway or Taxiway.
- Consider the use of ceramic bolts, especially if stainless steel Light Bases are being used. Guidance on the application of ceramic bolts is given in FAA Engineering Brief No 83.
- The fixture hold down bolts must be torqued properly and must not be over torqued. Recommended torque values are given in Installation on L-868 Base". If the torque limit is exceeded (typically due to the use of impact wrenches), the bolt is overstressed and is on its way to failure. After corrosion occurs, removal can cause the head to snap off. The head can then become FOD.

4.5 Electrical Requirements

- One of the most common causes of water leakage within in-pavement fixtures is a pinched cord-set. It is commonly caused by trapping the fixture wires when the fixture is installed on the base can. Use caution when mounting the fixture on the base can to prevent the incoming wires from becoming pinched.
- If the wire conductor jacket is compromised, the entire cord-set must be replaced.

- *Never* use electrical tape to repair the cord-set, since taping will not adequately seal the wire conductor jacket adequately to prevent water leakage.
- *Never* pick the fixture up using the electrical connection leads. Picking the fixture up by the leads can cause a break in the wire conductor jacket. If the wire conductor jacket is cut, water is drawn in during the On and Off periods due to thermal cycling of the fixture.
- Insure that the primary isolation transformer connection splicing methods as shown in FAA AC 150/5340-30 are followed. It is also recommended that heat shrink be used on each primary isolation transformer connection to minimize the risk of overall series circuit insulation resistance degradation.
- Verify the correct current levels are coming into the fixture. Measure the fixture input current on a sample of fixtures using a True RMS ammeter. If current is not correct at each CCR step:
- Verify the primary isolation transformer current is correct at all steps. If the primary current is incorrect, the CCR may need to be calibrated or repaired.
- Incorrect primary isolation transformer current may also be caused by low overall series circuit insulation resistance. Meg the series circuit and repair if necessary.
- Verify each isolation transformer wattage matches the wattage indicated in the Electrical Supply section of the User Manual.
- Verify each isolation transformer ratio is correct. For a 6.6A CCR, the isolation transformer must have a ratio of 6.6A/6.6A. For a 20A CCR, the isolation transformer must have a ratio of 20A/6.6A.

Where to obtain the documents mentioned in this Installation Guidance document:

- FAA AC 150/5340-30, *Design and Installation Details for Airport Visual Aids*, may be downloaded at http://www.faa.gov/airports/resources/advisory_circulars/

ADB Safegate Instruction Manuals may be downloaded at: http://www.adbsafegate.com/product_center/ . Then click on the "In-pavement Lighting" tab and then click on the link for your particular fixture. The manuals are in the "Manual Downloads" tab.

FAA Engineering Brief 83, *In-Pavement Light Fixture Bolts* , may be downloaded at: http://www.faa.gov/airports/engineering/engineering_briefs/

4.6 Installing the Fixture

This section provides installation instructions for the L852C-D and ICAO ITCF fixtures.

Note

Also see the following:

- Installing a New Optical Unit.

Note

Light Detail:

1. Light bases shall be installed with care to assure vertical & azimuth alignment of fixture.
2. Provide 2'-3' cable slack within light base to allow transformer servicing.
3. Bolts and washers used during installation of base, cable and transformers shall be replaced with new, for final installation. The minimum thread engagement into top flange of base is 0.5".
4. As required to maintain +0/ through -1/16" below grade FAA installation tolerance, a maximum of three spacer rings may be stacked together.

4.6.1 Overview of Sequence of Work

1. Electrical contractor locates new light bases and interconnecting conduit trench, and excavates for light base bottom section by saw cutting or core drilling.

Electrical contractor prepares subgrade and stone subbase, sets bottom section with rebar, rigid steel conduit stubs and drain, and pours high early strength concrete-encasement excavation. Electrical contractor shall record can locations and elevations of mud plate after concrete- encasement.

Electrical contractor excavates conduit trench, installs rigid steel and fittings, backfills conduit trench with high early strength concrete.

2. General contractor prepares and installs concrete pavement.

   Electrical contractor makes a pilot core to find mud plate center point indent before final core-drilling.

3. Electrical contractor core-drills concrete pavement.

   Electrical contractor installs top section, y-flange ring, space and lighting fixture, and pours epoxy joint sealer. Provide space for adjustment with spacers, maximum number of spacers shall be 3.

4. Se specific details as shown in FAA AC 150/5340-30 (current edition).

4.6.2 Safety Considerations

Read the installation section of all system component manuals before installing this equipment. A thorough understanding of system components and their requirements will promote safe and efficient installation. See FAA AC 150/5340-30, Design and Installation Details for Airport Visual Aids, and site plans and specifications for field installation of taxiway in-pavement lights.

WARNING

Electrical Shock
Allow only qualified personnel to install ADB Safegate and auxiliary equipment. Use only approved equipment. Using unapproved equipment in an approved system may void FAA approvals. Observe and follow the safety instructions in this document and all other related documentation.
Make sure all equipment is rated and approved for the environment where it is being used.
Failure to follow these warnings may result in serious injury or equipment damage.

4.6.3 Unpack the Unit

To reduce the possibility of damaging the light assembly, unpack the F-Range components at the installation site. The F-Range fixtures may be packed in individual boxes; for larger quantities, up to 36 fixtures may be packed in one box.

To unpack the F-Range fixture, open the box flaps and carefully remove the top packing material.

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

4.6.4 Coding

Review the coding details for the appropriate type of fixture before installation.

If applicable, verify you have the correct kit for the light fixture you are upgrading.

ITCF(L) and ICAO Coding are identified in Parts.

Note
The triangular arrowhead on the top of the fixture shows the location of the index pin in the lower cover. The arrowhead pointer does NOT indicate any geographical orientation or placement.

4.6.5 Verify Input Requirements and Equipment Needed

The light fixture is designed for connection to a 6.6A or 20A series lighting circuit via an L-830 (60 Hz) or L-831 (50 Hz) isolation transformer.

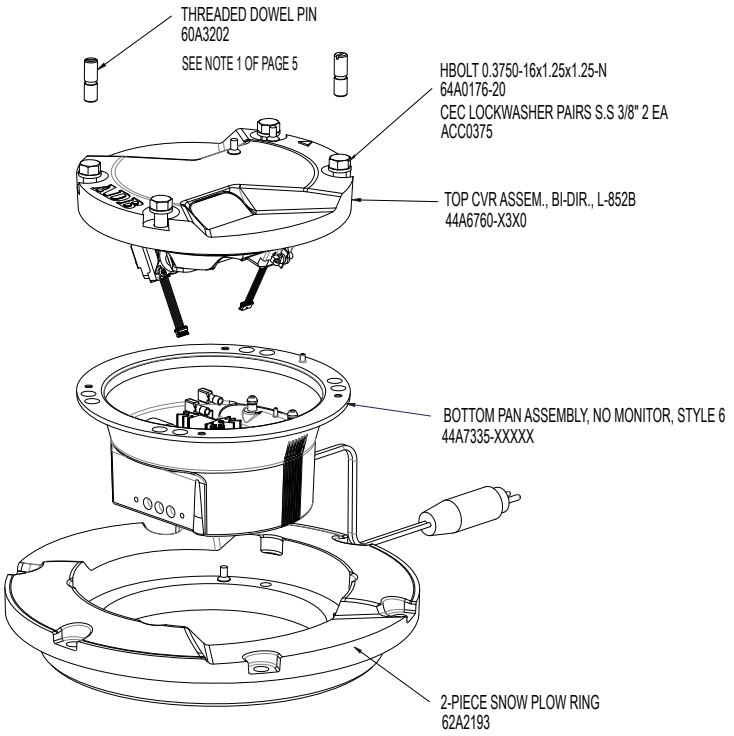
Make sure you have the necessary tools and materials ready for installation (not supplied). Also consider other tools that might be needed based on site-specific conditions.

Table 1: Suggested Tools and Materials for Installation and Repair

Qty.	Description	Qty.	Description
1	Torque wrench	1	Set of screwdrivers, one with 3/8" (9.525mm) minimum blade width
1	Alignment jig		
1	Diamond-faced core drill	As needed	Silicone grease
1	Diamond-faced saw, 3/8" (9.525mm) thick	As needed	Joint sealing filler
1	Crimping tool	1	Pressure test fitting assembly
1	Small water suction pump	As needed	Dow Corning Molykote® 3452 or equal (ADB P/N 67A0095) - used on top cover prism seal
2	Eyebolts, 3/8 inch (9.525mm) diameter		
1	Lifting rod, 16 inches (406mm) long	As needed	Novagard® Silicone Versilube® G322L™ (ADB P/N 67A0009) - used on O-ring between top cover and inner pan assembly; also may be applied to four nipples of inner pan assembly to install optical assembly
1 or 2	L-830 / L-831 isolation transformer		
1	Set of fiber brushes		
1	Set of socket wrenches, 1/2" (12.7mm) drive		

4.7 Snow Plow Ring Assembly

Figure 5: Snow Plow Ring

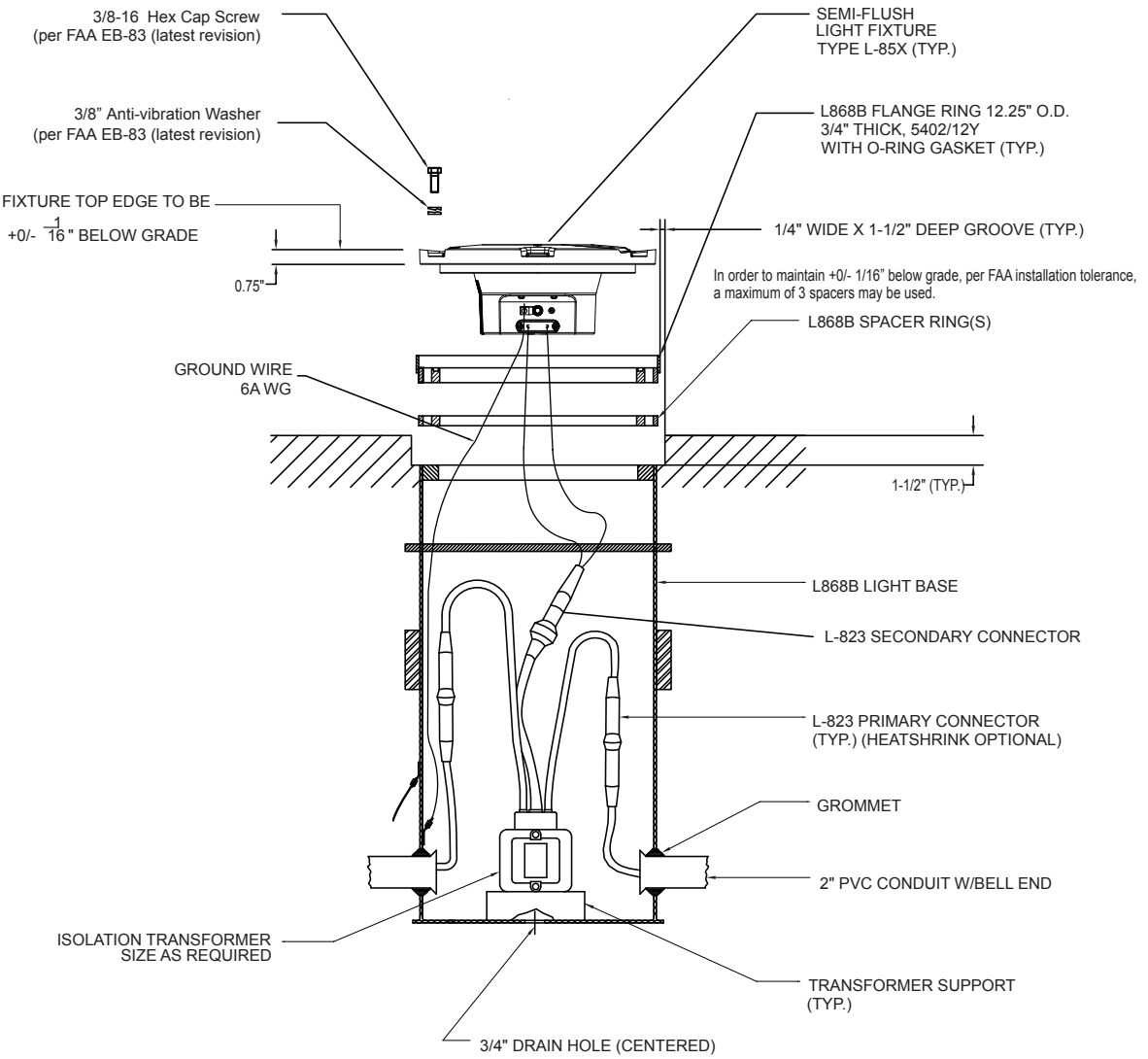


Note

Snow Plow Ring for 2- Piece ITCF L-852A(L) - D(L), P/N 62A2193
2-Piece (8" Optical Center) L-852J(L) and K(L) NOT AVAILABLE.

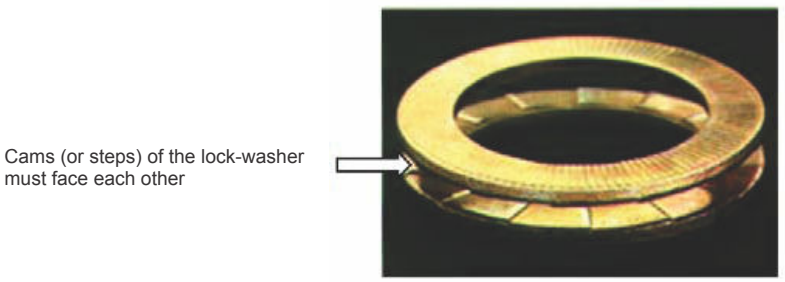
4.8 Typical L-868 Assembly

Figure 6: Diagram of the Fixture Installed in a 1-Piece Base Can



1. Torque according to: FAA EB-83 (latest revision).

Figure 7: Anti-vibration washer example



CAUTION

Per FAA AC 150/5340-30, Chapter 10, and FAA Engineering Brief No 83 (latest revision), it is extremely important that other types of washers, such as split washers, must not be used. Failure to use properly installed anti-vibration lock washers will cause mounting bolts to become loose. The cams (or steps) of each half of the lock washer must face each other.

4.9 Installation on L-868 Base

The light assembly is shipped complete, and is ready for installation.

To install the fixture on an L-868 base, see FAA AC 150/5345-30 and the project site-specific plans and specifications for details on L-868 base installation.

Note

Mounting bolts are not supplied with the fixture. Mounting bolts and anti-rotation lock washers are normally supplied with the base can spacer or flange ring. If a flange ring is used, the bolt length is 1-1/4 inch (32mm) plus the thickness of the flange ring.

Also read the following guidelines:

1. Clean the base receptacle. Make sure the base receptacle is completely clean and dry. The mating surfaces must be clean and free of foreign particles.
2. If, present, fit an appropriate lifting tool into the two threaded holes, which are located 180° apart in the cover.

The lifting tool can be made from two 1/2 x 13 eyebolts (1-inch ID) and a 1/2-inch diameter, 16-inch (406mm) long rod or pipe inserted through the eyebolts.

CAUTION

Never hold the light fixture by the wires. Doing so may damage the insulation, break the waterproof seal and cause insulation faults and water leakage.

3. Carry the light assembly to the base.
4. Place the light assembly next to the opening in the L-868 base so that the L-823 connector can be connected with the mating receptacle from the L-830 or L-831 isolation transformer in the base. Make sure that the connection is solid and secure. Refer to the Electrical Supply section of the User manual for required isolation transformers.
5. Make sure items such as spacers, shims and gaskets are installed on the light base as indicated on site plans, specifications and drawings.
6. Position the light assembly over the L-868 base and set it onto the base. Align the light according to FAA AC 150/5345-30 and project plans and specifications. Remove the eyebolts and lifting rod.

CAUTION

Ensure that the cord set wires are NOT pinched between the base can and the fixture. Pinched wires can cause water to be drawn inside the fixture.

7. If present, lubricate the labyrinth gasket with water. soap may be added to the water (8" only).

CAUTION

Do not use silcon or any other type of grease. Avoid the use of soap that contains silicon or glycerin.

8. Attach the six fixing bolts and anti-vibration washers. [See FAA EB-83 (latest revision)]

CAUTION

Due to the risk of bolts vibrating loose, do not use any type of washer with the fixing bolts (such as split lock washers) other than an anti-vibration washer. Anti-vibration washers as defined in FAA EB-83 (latest revision).

9. Turn on the power to determine whether the fixture will illuminate. Operate for a minimum of five minutes.

4.10 Torquing and Installation Guidance for In-pavement Fixtures

In-pavement fixtures must be installed according to the plans and specifications; the applicable regulatory guidance; and the following guidance. The importance of using the proper fixture clamping components and bolt torque to minimize the risk for fixture failure or loosening of clamping components cannot be overemphasized. Refer to "Bolt Torqueing Maintenance" for torque and installation guidelines for this fixture.

WARNING

Foriegn Object Damage

Read installation instructions in their entirety before starting installation.

- Failure to follow the installation guidance could result in bolt loosening or bolts breaking off, resulting in catastrophic failure of the fixture and/or the mounting system components.

Failure to follow these warnings may result in serious injury or equipment damage.

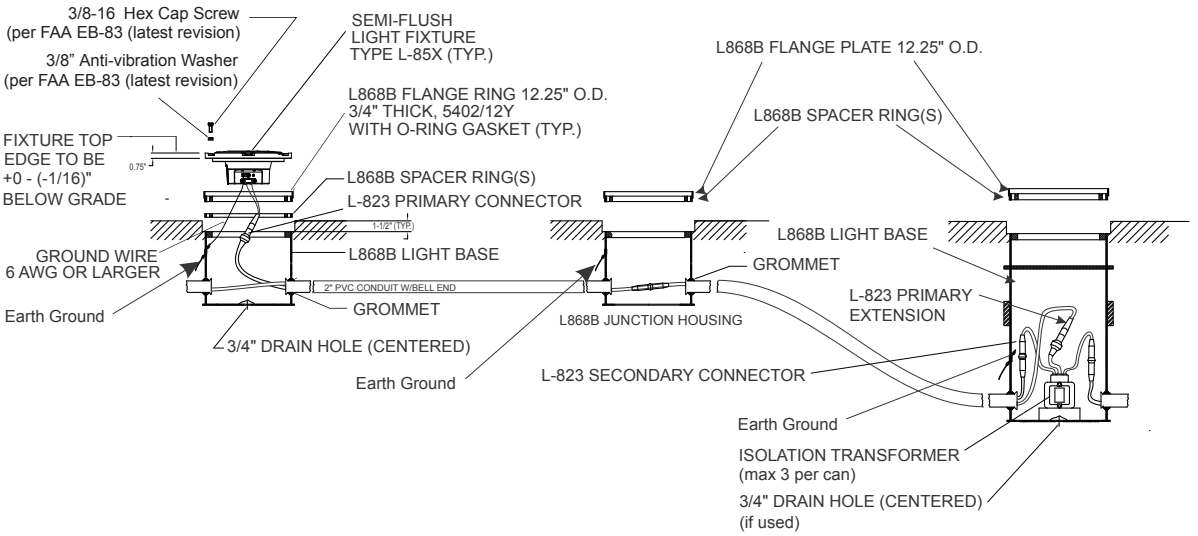
4.11 Installation on a Shallow Base

Installing the F-Range light fixture on a shallow base involves preparing the pavement recess and wire ways, then installing the light fixture on a shallow base. See " F-range Base Assembly" for additional details on the optional shallow base supplied with F-Range fixtures.

See FAA AC 150/5345-30 and the project site-specific plans and specifications for details on shallow base installation.

Also follow the applicable instructions in the previous section, "Installation on L-868 Base", when connecting, installing and powering the fixture.

Figure 8: Diagram of the Fixture Installed in a 1-Piece Base Can



5.0 Maintenance

WARNING

Read the instructions in their entirety before starting installation.

This section provides maintenance instructions for the L852 ITCF LED Light Fixtures

5.1 L852 A-D ITCF Maintenance

Reference "Mechanical Requirements" and "Electrical Requirements" for the recommendations when installing or repairing of inset lights.

Table 2: Maintenance Schedule

Interval	Maintenance Task	Action
Weekly	Check for dirty channel and lens.	Clean channel and prism. Refer to *Cleaning Light Channel and Prism* in this section.
Monthly (or more frequently during rainy seasons)	Check for moisture in the light fixture.	Open up the light fixture. Clean, dry, and inspect the light assembly. Replace O-ring.
Every 60 days, or whenever the light assembly is serviced	Check for improper torque on hold-down bolts.	Refer to Bolt Torque Preventive Maintenance Schedule in this section.
After snow removal	Check for damaged light fixtures.	Replace damaged fixtures. Use a power broom for snow removal, if practical. Follow recommended snow removal techniques described in AC 150/5200-30 (current edition).

5.1.1 Cleaning the Light Channel and Prism

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

1. Use a suitable fiber brush to remove all accumulated debris from the light channel.
2. Clean the outer surface of the prism 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 gently using, dry, oil-free compressed air at a pressure no greater than 10 psi (69 KN/m2) to evaporate or remove all remaining cleaner.

5.1.2 Lifting Optical Unit Out of Base

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

1. Remove the six fixing screws and washers or self locking nuts.
2. Fit the appropriate lifting tool into both threaded holes located (180 degrees apart) in the cover, lift the optical unit out of the base and place the optical unit next to the 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 torque according to guidance given in Installation on L-868 Base.

5. Take the replaced in-pavement fixture unit back to the maintenance shop where it can be serviced fully.

Note

Never hold the light fixture by the wires. This may damage the insulation, break the waterproof seal, and cause insulation faults and water leakage.

5.2 Repair Procedures

5.2.1 Opening the Optical Unit

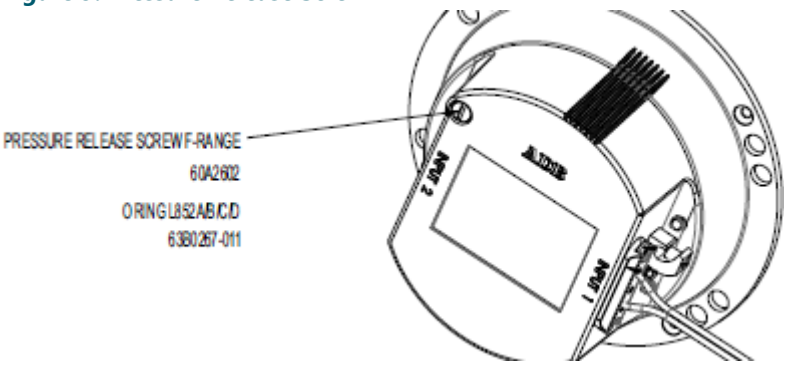
To open the optical unit, perform the following procedure:

1. Turn the light unit upside-down.
2. See Figure 9. Remove the pressure release screw.

Note

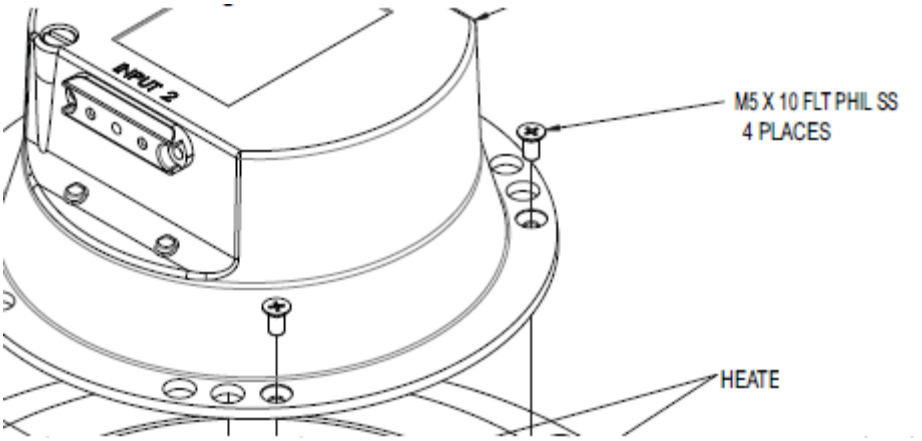
Removing the pressure release screw equalizes the pressure inside and outside the fixture, making it easier to break the seal and remove the inner cover.

Figure 9: Pressure Release Screw



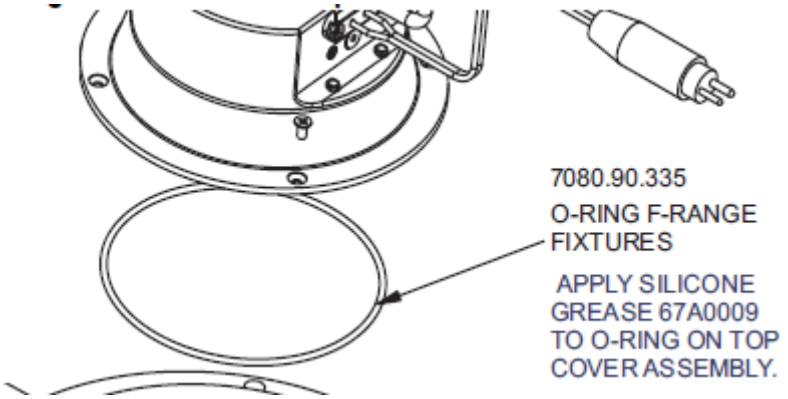
3. Remove the 4 screws. The use of an impact driver may be required to unlock the screws.

Figure 10: Removing Screws



4. Insert small or medium flat blade screwdriver in the machined recess slot between cover and inner cover and turn it vertically to separate the inner cover from the top cover.

Figure 11: Separating Inner Cover from Top Cover



5.2.2 Replacing the Prism

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

To replace the prism, perform the following procedure:

1. Remove the prism-clamp and prism-keeper plate secured in the inner pan assembly.

Figure 12: Replacing Prism

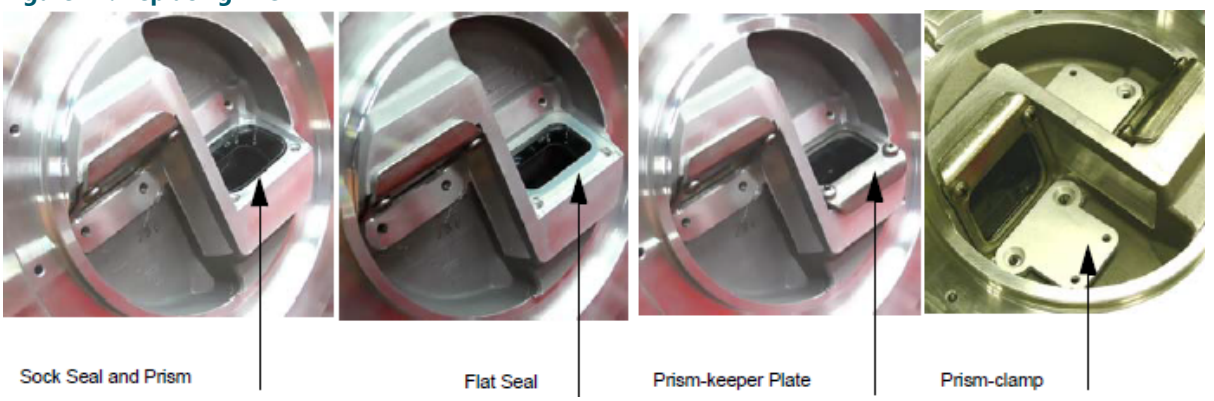


Figure 13: Top Assembly

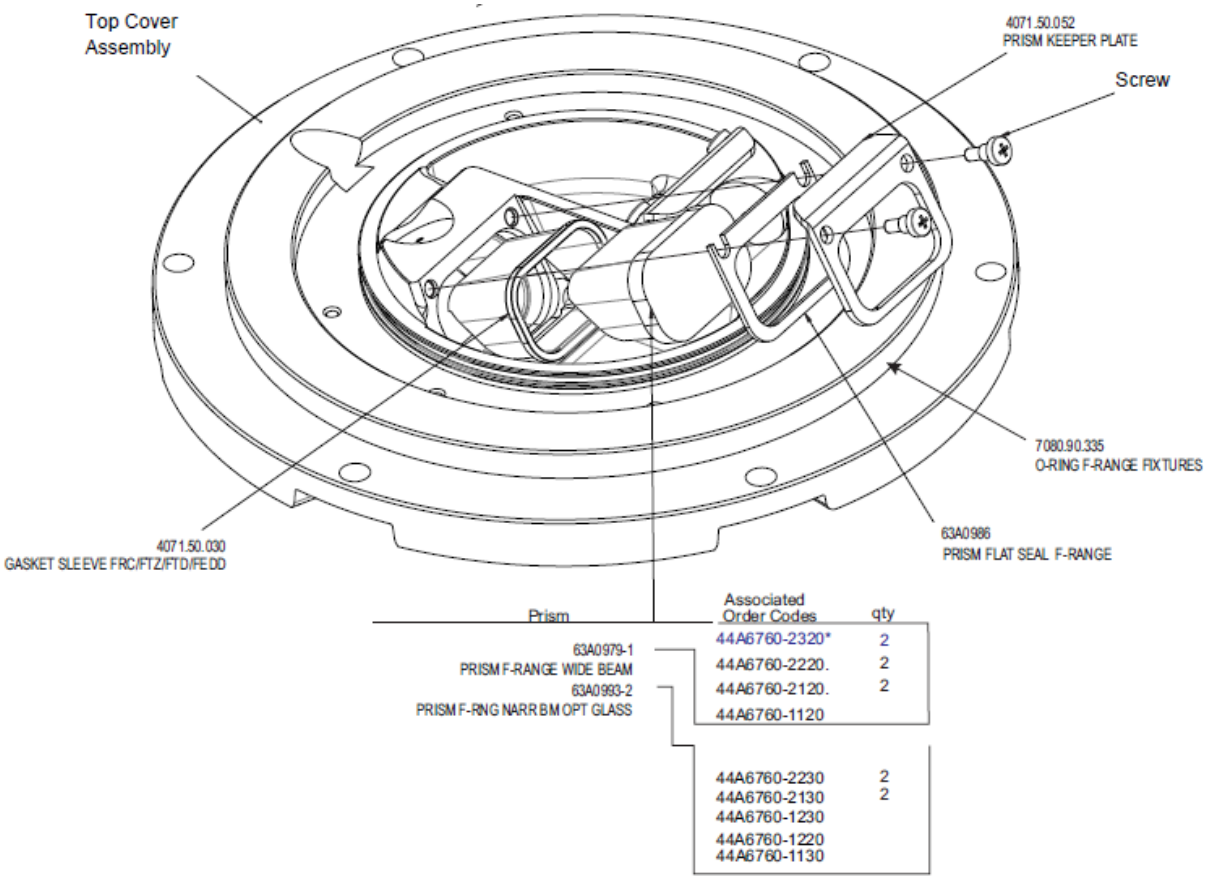
2. See Figure 12.
   Remove the flat seal.
3. See Figure 13.
   Push the prism with the sock seal towards the inside of the cover.
4. Clean and degrease the prism chamber with any effective solvent.

Note
Never use any abrasive substance. This will scratch or frost the prism. Use mineral spirits, or alcohol.

5. Apply a thin layer of lubricant MOLYKOTE BG87 INERTA or MOLYKOTE BG88 INERTA in the prism chamber using a small brush.
6. Install a new sock seal over the prism.
7. Push the prism/gasket assembly in the prism pocket from the inside and clean the inner surface of the prism.
8. Install a new flat seal over the prism-keeper plate.
9. See Figure 12.
   Reinstall hardware with the Phillips pan head screws. Apply a drop of sealant Loctite 270 (or equivalent) to the last threads. Torque to 31 ± 4 inch-pounds (3.5 ± 0.5 N•m).

5.2.3 Replacing a Prism on an L-852 LED Light Assembly

Figure 14: Typical 12" L-852A-C(L), and ICAO Straight, BI-DIR., 1 Cordset. Assembly Shown



Follow the steps in Replacing the Prism if the prism is broken or its surface is badly pitted or scarred.

1. Remove the prism-clamp plate secured in the cover.
   Discard the plate, and retain the countersunk screws.
2. Install the replacement prism-keeper plate supplied in the kit using the Phillips countersunk screws retained from step 1. (See Figure 22) This plate holds the LEDs. Do Not get grease on the LED surfaces or wires.
3. Apply a drop of sealant Loctite 270 or equivalent to the last threads.
4. Torque to 31 ±4 in-lb (3.5 ±0.5 N•m).
5. Connect the wires to the circuit board as shown in Figure 19.
6. Go to Installing a New Optical Unit to complete the installation.

5.2.4 Testing an LED assembly

For this test, use a Fluke 87 or equivalent meter.

CAUTION

Do no use the megger function or a resistive test of any meter on an LED assembly! This may damage the LED's properties required for proper operation.
This test only works for LED light engines of one or two LEDs. If three or more LEDs are present in the light engine, a different testing method is required which is not covered here.
these instruction can result in equipment damage.

A "Diode Test" function may be used as a quick pass/fail check on one or two LEDs. In the maintenance shop, open the fixture and unplug the LED assembly.

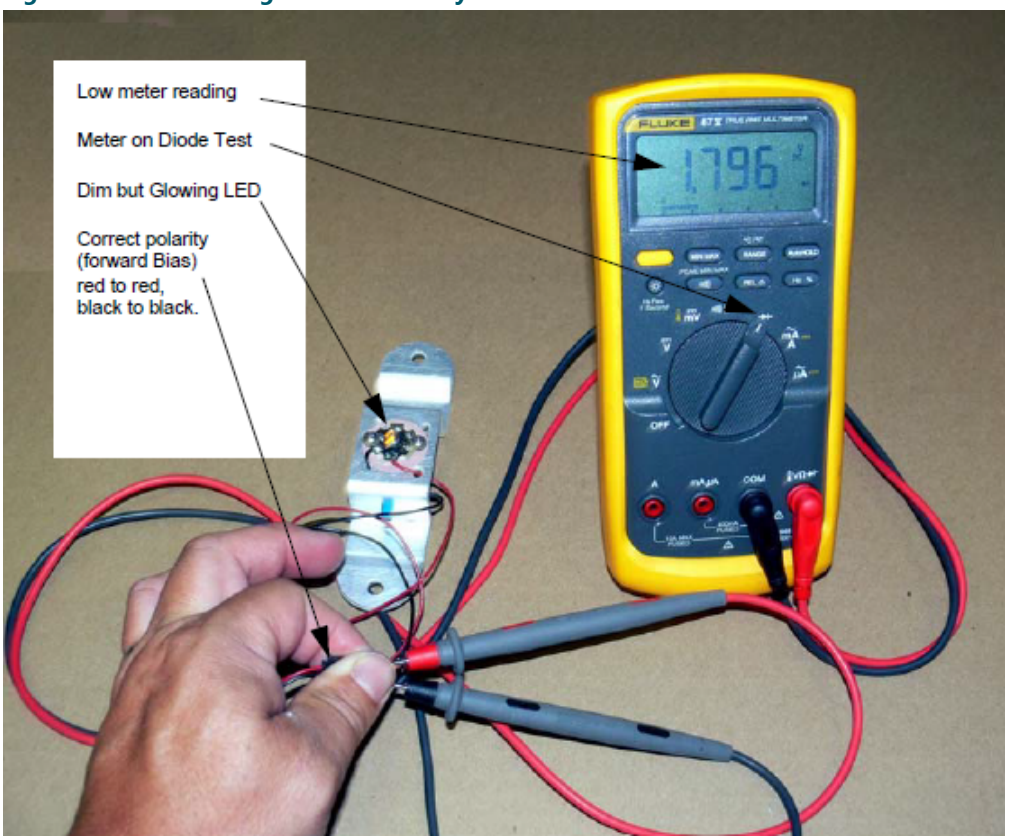
1. Set the meter to test a DIODE.
2. Connect the meter leads to the LED assembly.
   Observe if the LEDs glow and also note the meter reading of the LEDs.
3. Then reverse the meter leads and observe the LEDs again.

Note

With good LEDs when forward biased, the LEDs will glow dimly and the meter will indicate a low resistance. When the LEDs are reverse biased, the LEDs will not glow and the meter will indicate a high resistance.

4. Test a known, good LED assembly in the same manner to verify your meter's operation and typical meter indications.

Figure 15: Diode testing an LED assembly with a Fluke 87 Meter

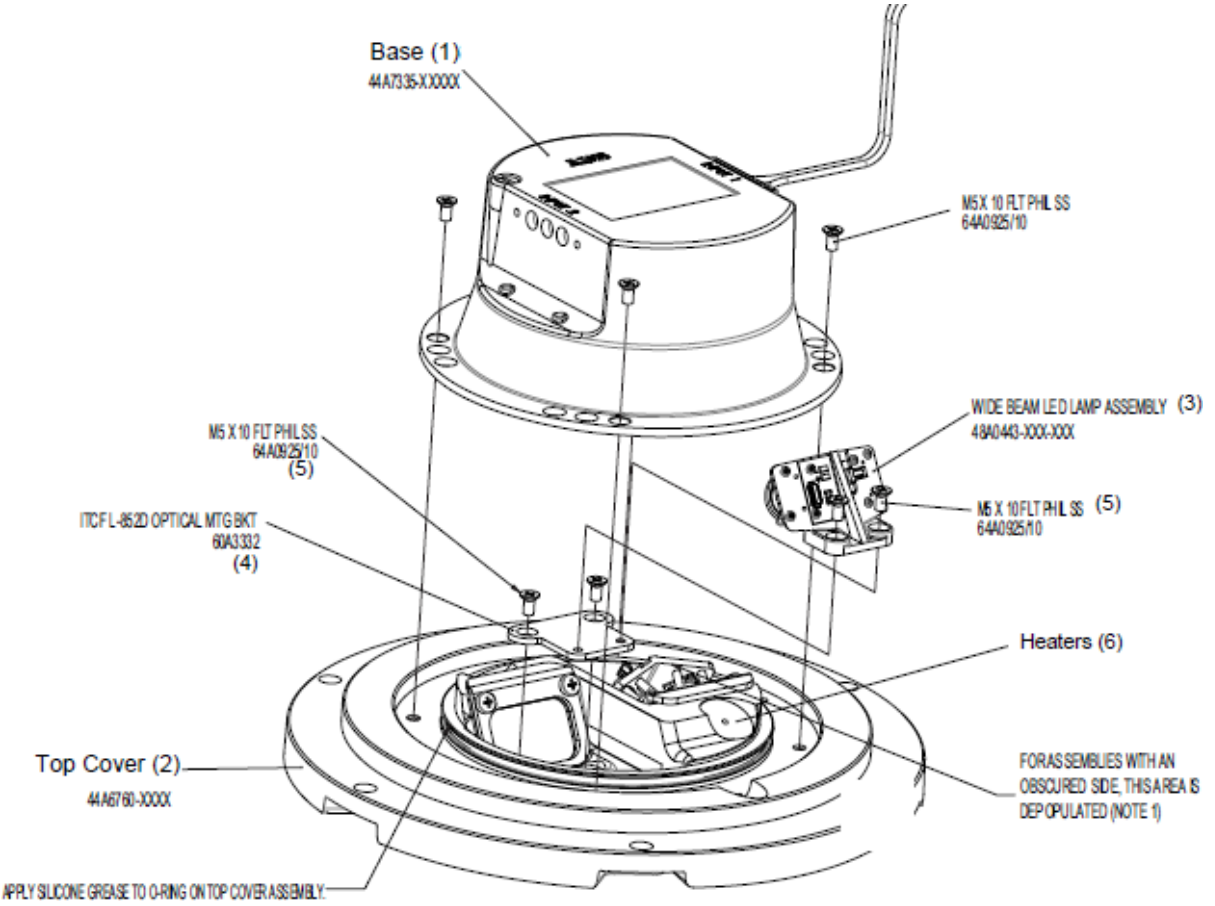


5.2.5 Replacing an LED Assembly

To replace the LED Assembly, perform the following procedure:

1. Separate the Base (1) the Top Cover (2).
2. Remove the LED Assembly (3) by removing screws (5).

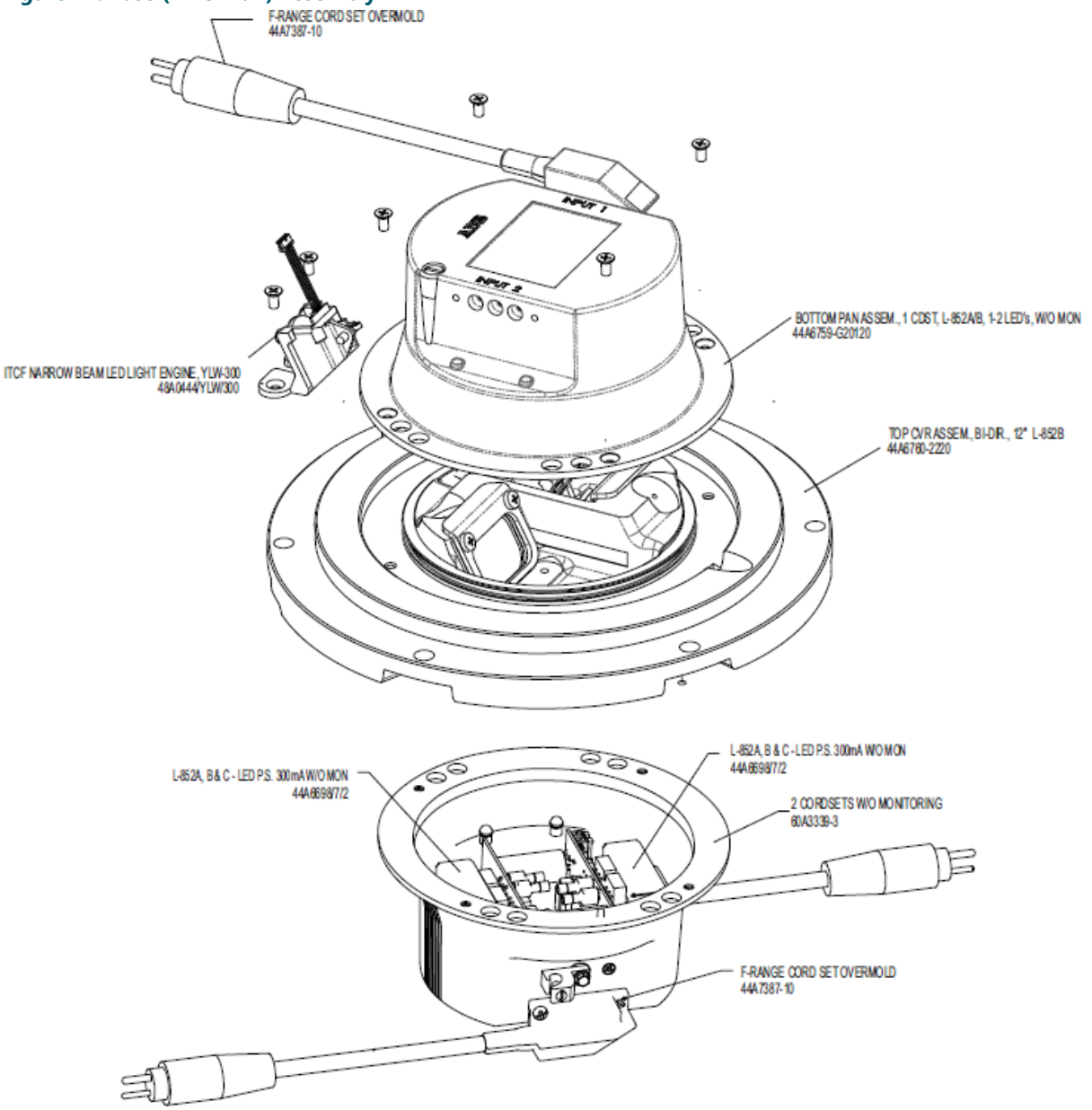
Figure 16: Removing LED Assembly from Top Cover Assembly



3. Position the new LED Assembly, replace screws and tighten.
   Torque the fixing screws to 31 ± 4 inch-pounds (3.5 ± 0.5 N•m).
4. Connect the LED assembly wires to the power supply for that light.
5. Close the unit.

5.2.6 Replacing the Cord Set

Figure 17: Base (Inner Pan) Assembly



To replace the cord set:

1. Open the optical unit and remove the bottom cover.
2. Unplug the fast-on terminals from the terminal block on the PCB.
3. Remove both Phillips screws and the Cord set overmold.
4. Cut the fast-on terminals from the cord set.
5. Pull the cord set out of the inner pan assembly.
6. Bring the new ADB Airfield Solutions cord set through the base pan (one wire per hole).
7. Pull the wires into the pan assembly.
8. Reinstall the cord set overmold by means of both Phillips screws.

9. Remove about 0.2 inch (5mm) of insulation from the wires.
10. Crimp on the fast-on terminals and connect to the terminal blocks ion the PCB.

5.2.7 Installing Power Supplies, Heaters, and Thermostats

Figure 18: Bottom Pan ITCF and ICAO Straight Assembly Cordset

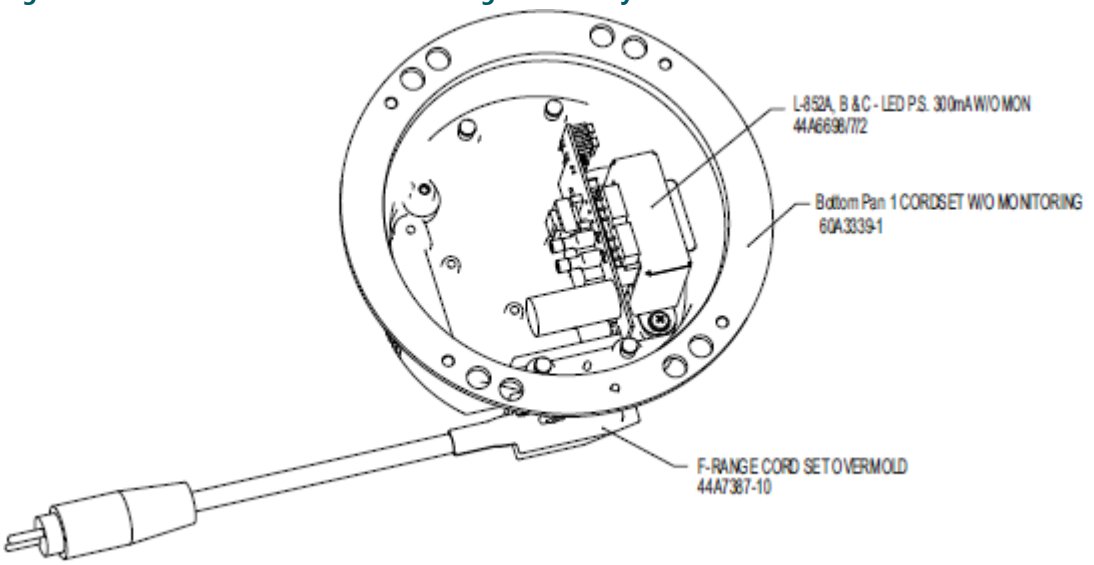
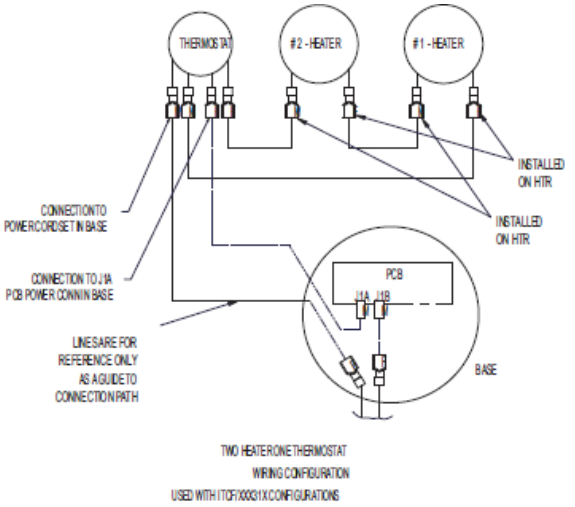


Figure 19: Thermostat and Heater



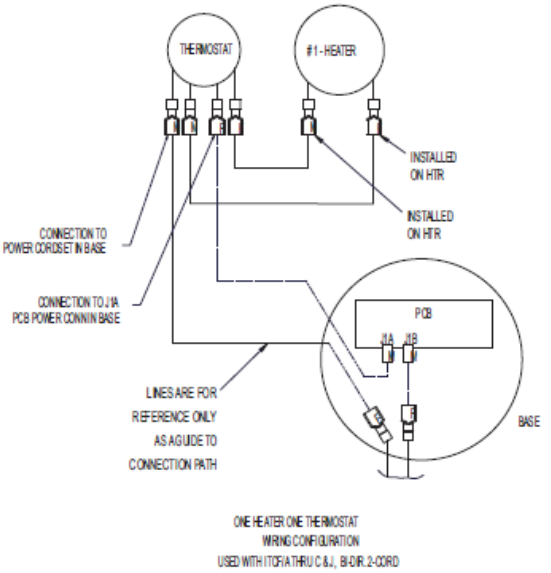


Figure 20: 1 heater and 1 Thermostat per Side

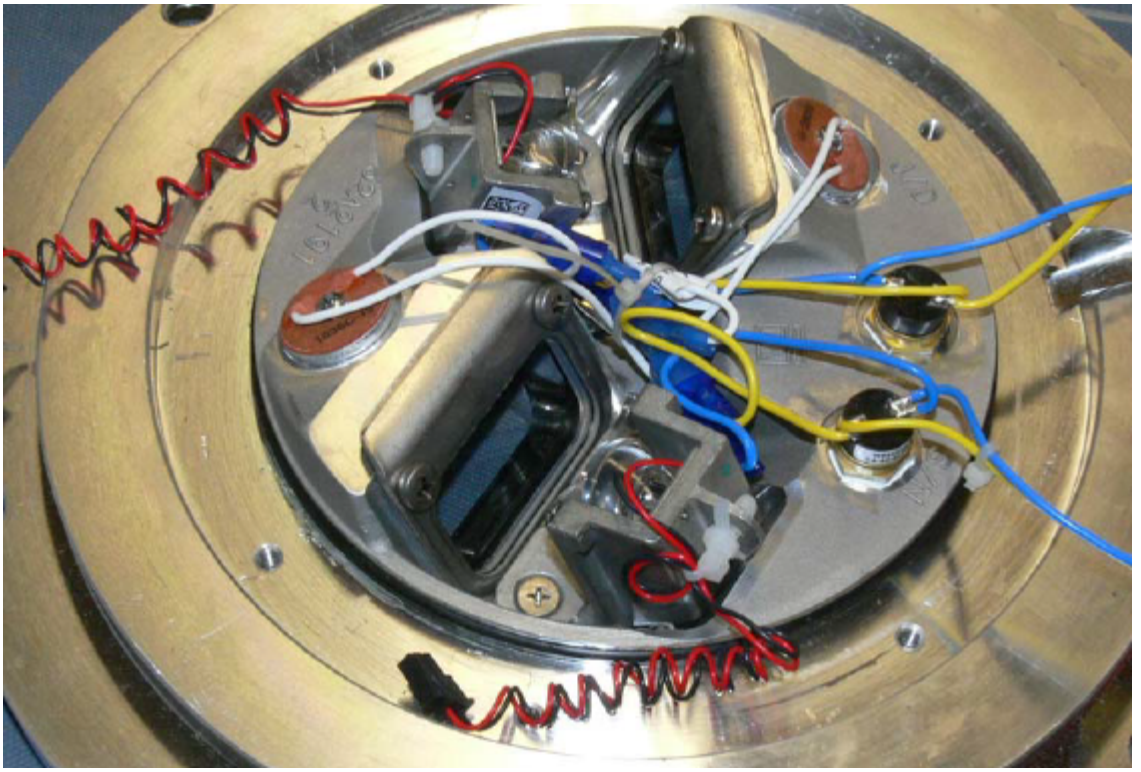


Figure 21: 2 heaters and 1 Thermostat

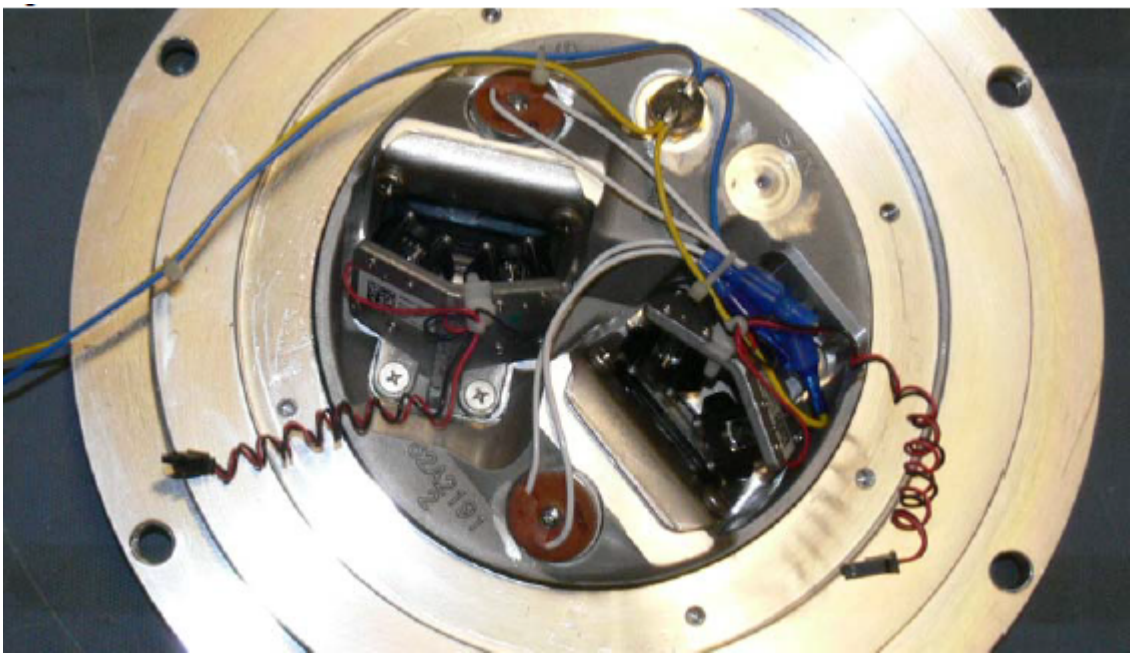
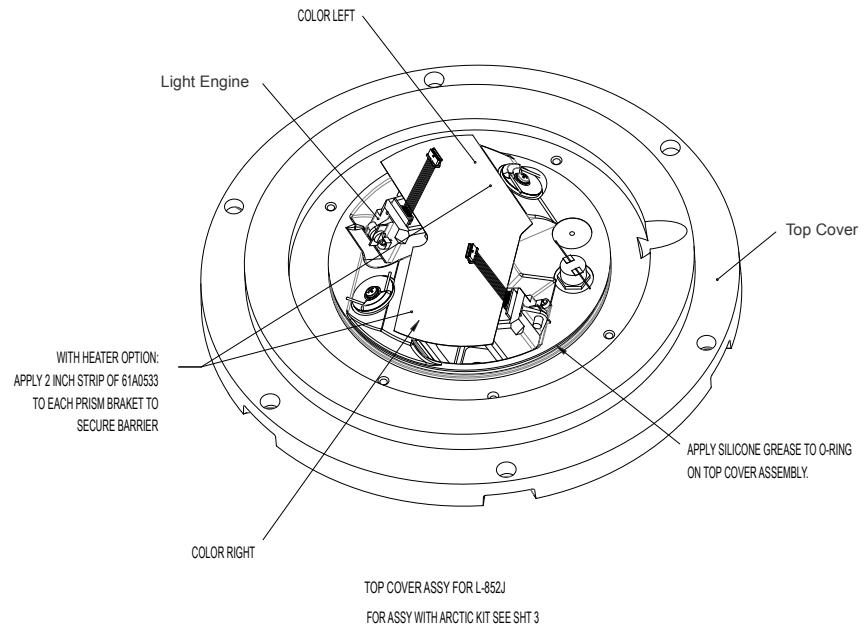
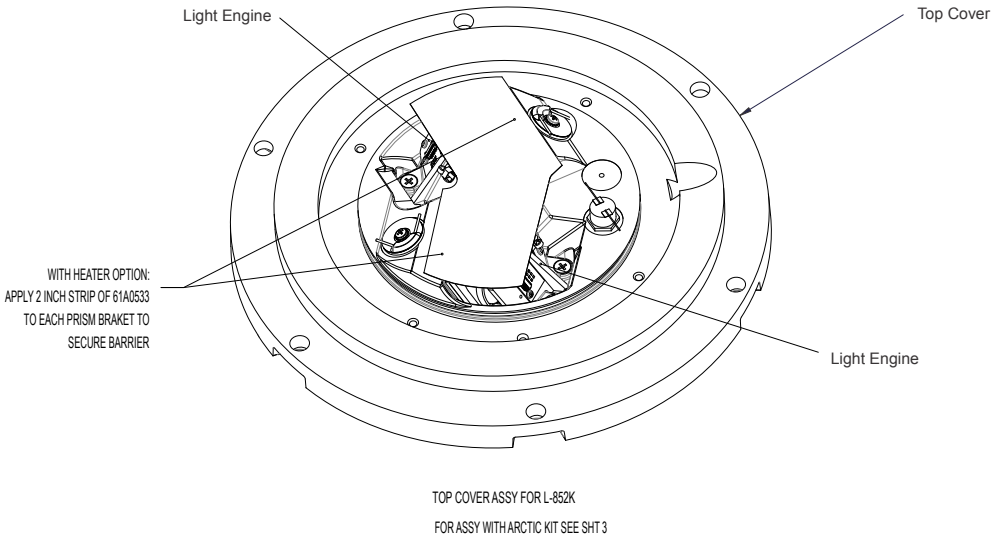


Figure 22: L-852J(L) and K(L) Assemblies





5.2.8 Installing a New Optical Unit

WARNING

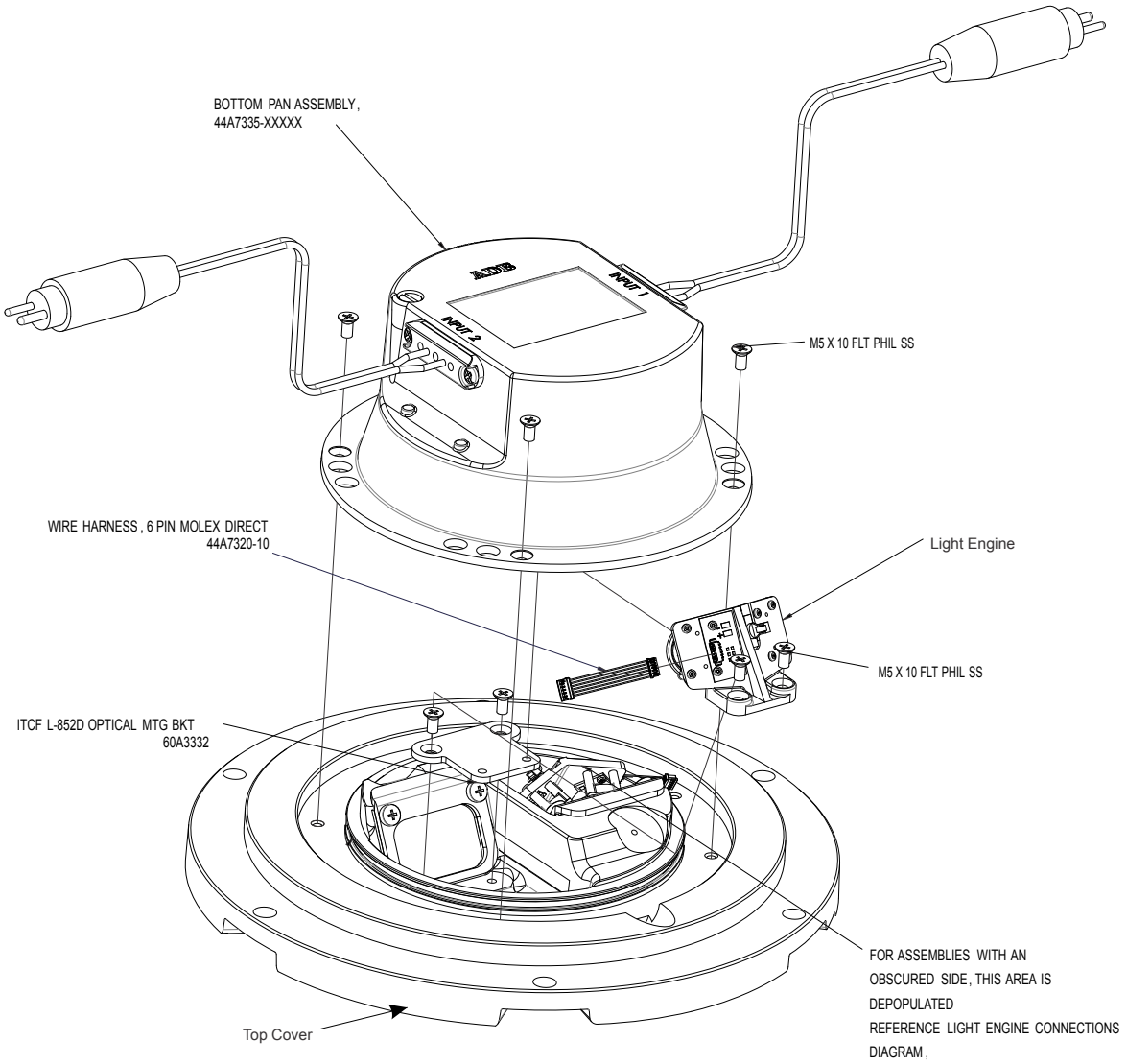
Equipment Damage

- Read the instructions in their entirety before starting installation.
- Failing to align the F-Range in-pavement light by the index pin could crack the inner pan, cross-thread the countersunk screws and will cause a vacuum test failure.

Failure to head this warning may result in equipment damage

To close the optical unit:

Figure 23: Typical 12" L-852D, BI-Directional., 2 Cordset Assembly Shown



1. Turn the cover upside down.
2. Make sure the contact surfaces for the O-ring are clean and apply a light coat of high quality neutral silicone grease such as Molykote 3452 (67A0095).
3. Install a new greased O-ring in the groove in the top cover.

Note
Use a synthetic grease such as Molykote 3452 (67A0095).

4. Remove the pressure release screw if it was not removed during the previous procedures.
5. Install the inner cover on the top cover.
6. Check to make sure the LED light engines are correctly positioned and the wires of the LED assemblies will not get damaged between both parts (cover and inner cover).
7. Align the index pin in the inner cover with the index pin hole on the top cover.
8. Press the inner cover on the top cover and secure with the countersunk screws.
   Apply a drop of Loctite 222 to the last threads. Torque screws to 22 ±4 in-lb (2.5 ±0.5 N•m).
9. Proceed to the next section, Testing for Leaks, to check that the assembly is watertight.

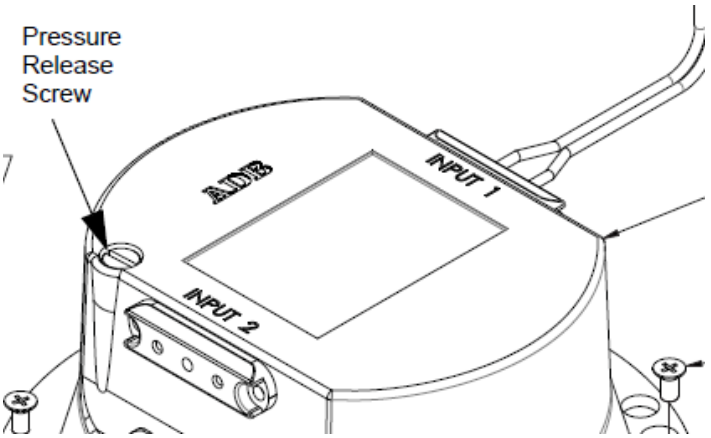
5.2.9 Closing Optical Unit

To close the optical unit, perform the following procedure:

1. Turn the top cover upside down.
2. Make sure that the contact surfaces with the O-ring are clean and apply a light coat of high quality neutral silicone grease.
3. Install a new greased O-ring in the groove located in the top cover.

Note
Use a synthetic grease such as MOLYKOTE BG87 INERTA or MOLYKOTE BG88 INERTA.

4. Remove the pressure release screw.



5. Install the inner cover on top of the cover.

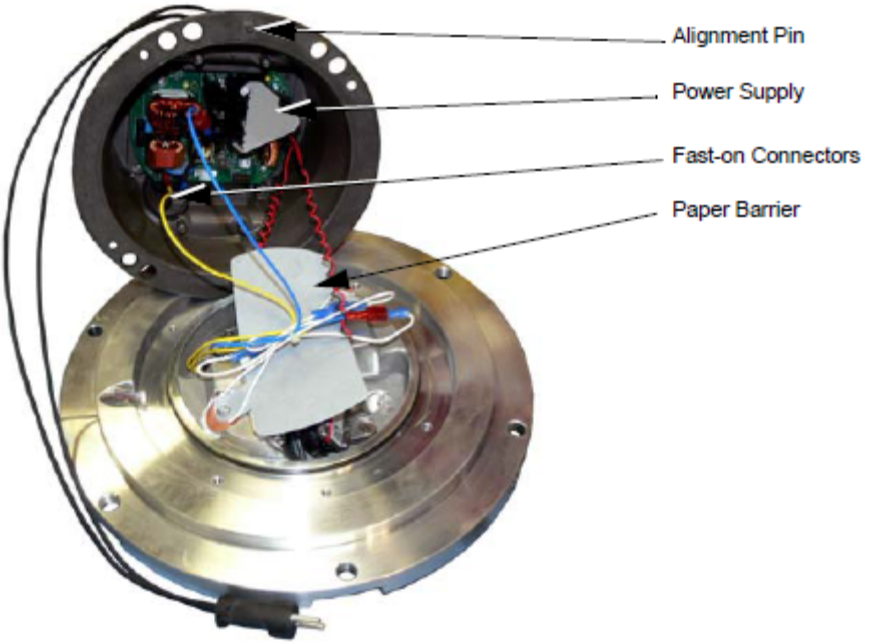
Note
Align the inner pan mounting holes on the top cover holes.

6. Make sure the base assembly and top assembly are correctly positioned and that the wires do not get damaged between both parts (top cover and base).
7. Press the inner cover of the inner pan assembly on the top cover and secure with the countersunk screws.
   Apply a droplet of Loctite 222 to the last threads. Torque screws to 22 ±4 inch-pounds (2.5 ±0.5 N•m).
8. Check the watertightness of the assembly by replacing the pressure release screw with a pressure test fixture.

   The leak path can then be located by submerging the assembly in a tank of water while pressurizing using shop air pressure to a maximum of 20 psi. Refer to Testing for Leaks.

Make sure the O-ring seal for the pressure release screw is in good condition and reinstall the pressure release screw.

Figure 24: Fixture Assembly



5.3 Testing for Leaks

To test for leaks, perform the following procedure:

1. See Figure 25.

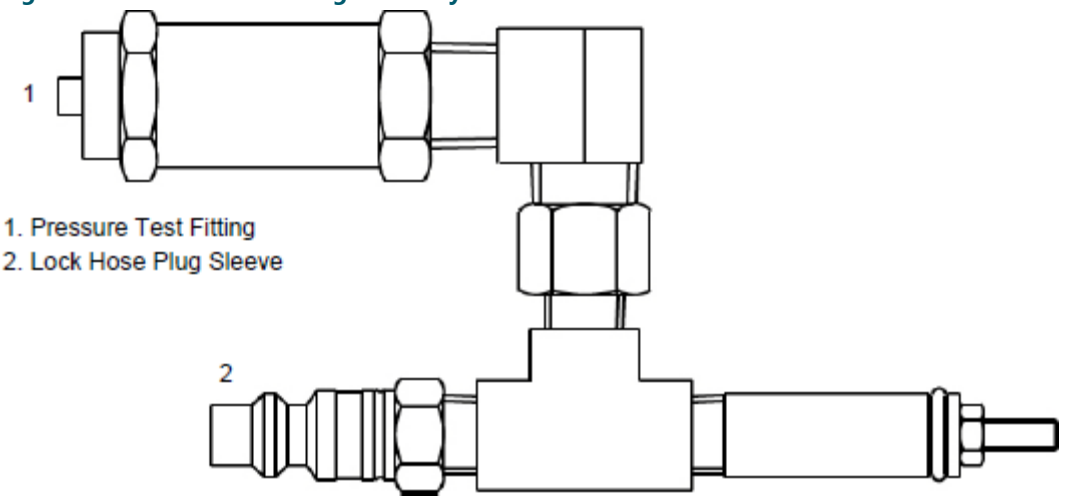
   Remove pressure relief screw.

2. See Figure 26.

   Screw pressure test fitting into the pressure relief port (the opening created when the pressure relief screw is removed). Screw fitting hand-tight.

Figure 25: Pressure Relief Screw

Figure 26: Pressure Test Fitting Assembly



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.
   If leak is fixed, depressurize and reinstall the pressure release screw (1).

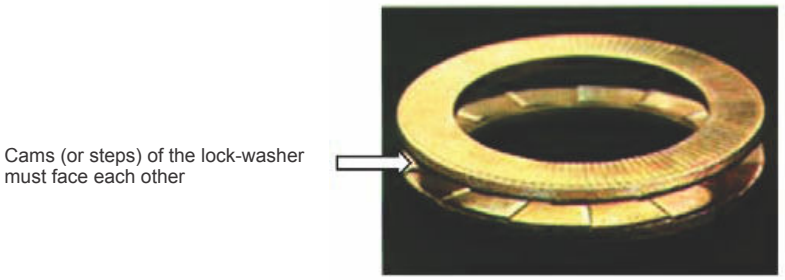
Go to Overview of Sequence of Work to finish.

5.4 Bolt Torque Preventive Maintenance Schedule

An established schedule for checking light fixture bolt torque and bolt condition is mandatory. This is particularly true for areas that are subject to high impact loads from aircraft such as runway status lights, runway touchdown zone lights, runway centerline lights, and taxiway lead-off lights. Although AC 150/5340-26 offers a recommended schedule for periodic checks, these checks should be tailored to the facility based on local conditions such as environmental issues and runway traffic load.

1. Torque according to: FAA Engineering Brief No 83 (latest revision).

Figure 27: Anti-vibration washer example



CAUTION

Per FAA AC 150/5340-30, Chapter 10, and FAA Engineering Brief No 83 (latest revision), it is extremely important that other types of washers, such as split washers, must not be used. Failure to use properly installed anti-vibration lock washers will cause mounting bolts to become loose. The cams (or steps) of each half of the lock washer must face each other.

FAA Cert Alert No. 14-03 refers to AC 150/5340-26 for the frequency of checking bolt torque. AC 150/5340-26 (latest revision) paragraph 5.3.4.1.4, *Bi-Monthly Checks* states: "*The torque of the bolts attaching the light fixture to its base should be checked with a calibrated torque wrench – never use an impact wrench.*"

Regular inspection as outlined in FAA Engineering Brief 83 (latest edition), Canada Civil Aviation Safety Alert Document CASA 2014-05, and any other applicable regulatory guidelines is critical in insuring torque on all bolts is restored to optimum values. Bolts that loosen more often should be inspected and re-torqued on a more frequent basis.

It is especially important to maintain a regular inspection schedule for LED fixtures. Since LED fixtures operate more reliably and are not subject to removal/replacement/re-torque as frequently as would be seen with incandescent fixtures, it is even more important to implement regular torque inspections.

It is critical that remedial action be taken if bolts are found to be loose or missing during inspection. If this occurs, it is important to carefully inspect all structural elements of the mounting system as defined in Installation. Also inspect the base can for general structural conditions such as:

- Is the base can solidly mounted in the pavement, and not moving or rocking during rollovers?
- If a base can extension is present, are all extension attachment bolts tight?

If poor base can structure or mounting system components are not in accordance with regulatory requirements or are in poor condition, it is the airport's responsibility to:

- Increase the frequency of bolt torque inspection to insure that no bolts become loose or missing.
- Quickly replace/repair the mounting system components, which may include replacing the entire base can.

Airport operators must also ensure these maintenance activities are properly documented.

Digital Asset Tracking and Service Application Information

ALIS is ADB SAFEGATE's new digital asset tracking, inspection and service solution, helps airports easily register airside assets, electronically schedule and track maintenance, and record maintenance and inspection tasks in compliance with ICAO and FAA standards.

Easy to implement and use, cloud-based software enables a more reliable and fail-safe approach to asset tracking and maintenance by always using live field data and eliminating inefficiencies caused by human error. Every asset is registered using GPS data and its status recorded, so airport maintenance teams get a clearer view of maintenance schedules and history, allowing them to manage resources more effectively as well as improve the safety and longevity of airside assets. This increased visibility helps airports plan and schedule preventive maintenance, or undertake corrective maintenance more quickly, to reduce downtime and significantly improve operational availability.

https://adbsafegate.com/product-center/airfield/airside-services/ALIS-airside-maintenance

- Easily integrates electronic torque measurements and photometric measurement reports to provide a complete view of the asset's status.
- ALIS can be integrated with the AirTorque or Ingersoll Rand® QX series wrenches, which are used for accurate, ergonomic torque inspections of AGL fixtures. The applied torque can seamlessly be registered in the ALIS system as a part of the maintenance record.
- The iPhone application of ALIS – ALIS Personal – makes it easier than ever to register maintenance actions while working. It will proactively show you which assets you still need to work on and select the closest one to you automatically. ALIS Personal acts as a feedback and information device for the associated torque wrench.

6.0 Troubleshooting

L852A-D(L), J(L), K(L) and ICAO Straight ITCF

WARNING

Electric Shock
Read the instructions in their entirety before starting troubleshooting.
USE EXTREME CAUTION WITH ENERGIZED CIRCUITS AS LETHAL VOLTAGES ARE MORE LIKELY WHEN A FAULT IS PRESENT.

6.1 Troubleshooting Tips

This guide covers only the most common problems. For additional help, contact your local ADB Safegate representative or the ADB Safegate service department.

Reference Mechanical Requirements and Electrical Requirements for the recommendations when installing or repairing of in-pavement lights.

Table 3: Troubleshooting Guide

Problem	Possible Cause	Corrective Action
LED not energizing	LED defective ITEL PCB defective	Replace Optical LED assembly. Refer to Testing an LED assembly. Replace the PCB, see Installing Power Supplies, Heaters, and Thermostats.
	Loose or broken contacts	Tighten or replace, then verify that the fixture is sealed.
	Moisture inside assembly causing current leakage	Open the light assembly. Clean, dry and inspect the assembly. Replace the O-ring and verify the fixture is sealed.
	Fixture wires pinched between base can and fixture	If both wires are pinched between the fixture and the base can, the isolation transformer is shorted and the LED will not energize. Replace fixture leads. Refer to Replacing the Cord Set. • Use care when remounting fixture on the base can to ensure that the wires do not get pinched.
	Defective isolation transformer	Check transformer output current with a true RMS meter using a clamp-on current probe. This can be done by placing a short across the transformer secondary and verifying that the secondary current is present. • For 6.6A/6.6A transformers, the primary and secondary currents should match. • For 20A/6.6A transformers, the secondary current should be one-third of the primary current. If the secondary current is too low or zero, replace the isolation transformer.
	Defective remote control device	Consult the remote control device's instruction manual.

Table 3: Troubleshooting Guide (Continued)

Problem	Possible Cause	Corrective Action
LED not turning on at normal level	Continuity to LED incorrect or PCB failed	Check that the LED is connected correctly. Replace power supply or internal wiring.
	Isolation transformer secondary current incorrect	Check transformer current with a true RMS meter using a clamp-on current probe. This can be done by placing a short across the transformer secondary and verifying that the secondary current is present. • For 6.6A/6.6A transformers, the primary and secondary currents should match. • For 20A/6.6A transformers, the secondary current should be one- third of the primary current. If the secondary current is too low or zero, replace the isolation transformer.
	Wrong fixture installed	Check the label on the bottom of the fixture. Replace if necessary.
Distorted light beam output	Broken, damaged or wrong prism installed	Check parts list and install correct prism.
Water inside optical chamber	Damaged or missing prism seals or top cover O-ring	Replace both prism seals. Replace top cover O-ring. Verify that the fixture is sealed.
	Fixture wires pinched between base can and fixture	A break in the fixture wire will cause water to be drawn into the fixture during the fixture's heating and cooling cycle (when switched on and off). Replace fixture leads. Refer to Replacing the Cord Set • Use care when remounting fixture on the base can to ensure that the wires do not get pinched.

7.0 Parts

Ordering Code

ITCF- X X 0 X X X

Series
A = L-852A(L)
B = L-852B(L)
C = L-852C(L)
D = L-852D(L)
J = L-852J(L)
K = L-852K(L)

LED Color
1 = Yellow/Yellow
2 = Green/Green
3 = Yellow/Green[2]
5 = Green/Obscure
6 = Yellow/Obscure
8 = Red/Green[2]
0 = White/White (L-852D only)
A = Green Left/Yellow Right (J/K only)[1,3]
B = Yellow Left/Green Right (J/K only)[1,3]
C = Green Left/Obscured Right (J/K only)[3]
D = Obscured Left/Green Right (J/K only)[3]
E = Yellow Left/Obscured Right (J/K only)[3]
F = Obscured Left/Yellow Right (J/K only)[3]
G = White/Yellow (L-852D only)
H = Green/White[2]
I = Red/White[2]
J = Red/Yellow[2]

0

Mounting and Cord Set
1 = Two L-823 cord sets, L-868B (12") standard base[5,6]
3 = One L-823 cord set, L-868B (12") standard base
5 = One L-823 cord set, L-868A (10")[4,5]
6 = Two L-823 cord sets, L-868A (10")[4,5,6]

Arctic Option
0 = Without arctic option
1 = With arctic option

Power
2 = 60 Hz
3 = 50 Hz[5]
4 = 50/60 Hz (two cord sets)[5]

Notes

- Contact the Sales Department for availability of ITCF-L (ICAO straight) and ITCF-M (ICAO curved) options.

1 Color options not recognized by the FAA.
2 Color options 3, 8, H, I, and J are not recognized by the FAA for L-852B(L), L-852D(L), L-852J(L) and L-852K(L) fixtures.
3 See graphic below for L-852J/K(L) color selection guidelines.
4 Refers to older style 10-inch L-868A base can compliant to AC 150/5345-42C. 10-inch base cans are no longer specified in the current FAA Advisory Circular.
5 Not ETL Certified.
6 Use Power option 4 for fixtures with two cord sets or as directed by ADB SAFEGATE.

Two-piece Ordering Code[1,2]

ITCF- X X 0 X X X

Series
A = L-852A(L)
B = L-852B(L)
C = L-852C(L)
D = L-852D(L)

LED Color
1 = Yellow/Yellow
2 = Green/Green
3 = Yellow/Green[3]
5 = Green/Obscure
6 = Yellow/Obscure
8 = Red/Green[3]
0 = White/White
G = White/Yellow
H = Green/White
I = Red/White[3]

0

Mounting and Cord Set
7 = One L-823 cord set, L-868B (12") standard base with 4 bolts[4]
8 = Two L-823 cord sets, L-868B (12") standard base with 4 bolts[4]

Arctic Option
0 = Without arctic option
1 = With arctic option

Power
2 = 60 Hz
3 = 50 Hz

Notes

1 Not available for L-852J(L) and L-852K(L).
2 Not ETL Certified.
3 Color options not recognized by the FAA.
4 Fixture with snowplow ring is shipped with 4 bolts and 2 optional pin inserts, allowing a field modification to a 2-bolt/2-pin configuration.

7.1 Part Diagrams and Part Numbers

To order parts, call ADB Safegate Customer Service or your local representative.

This section provides a schematic drawing of each F-Range type, along with a list of part numbers, ordering codes and spare components. Refer to the appropriate section for the fixture type.

Figure 28: ITCF, L-852x, 1 Cordset. Assembly Shown

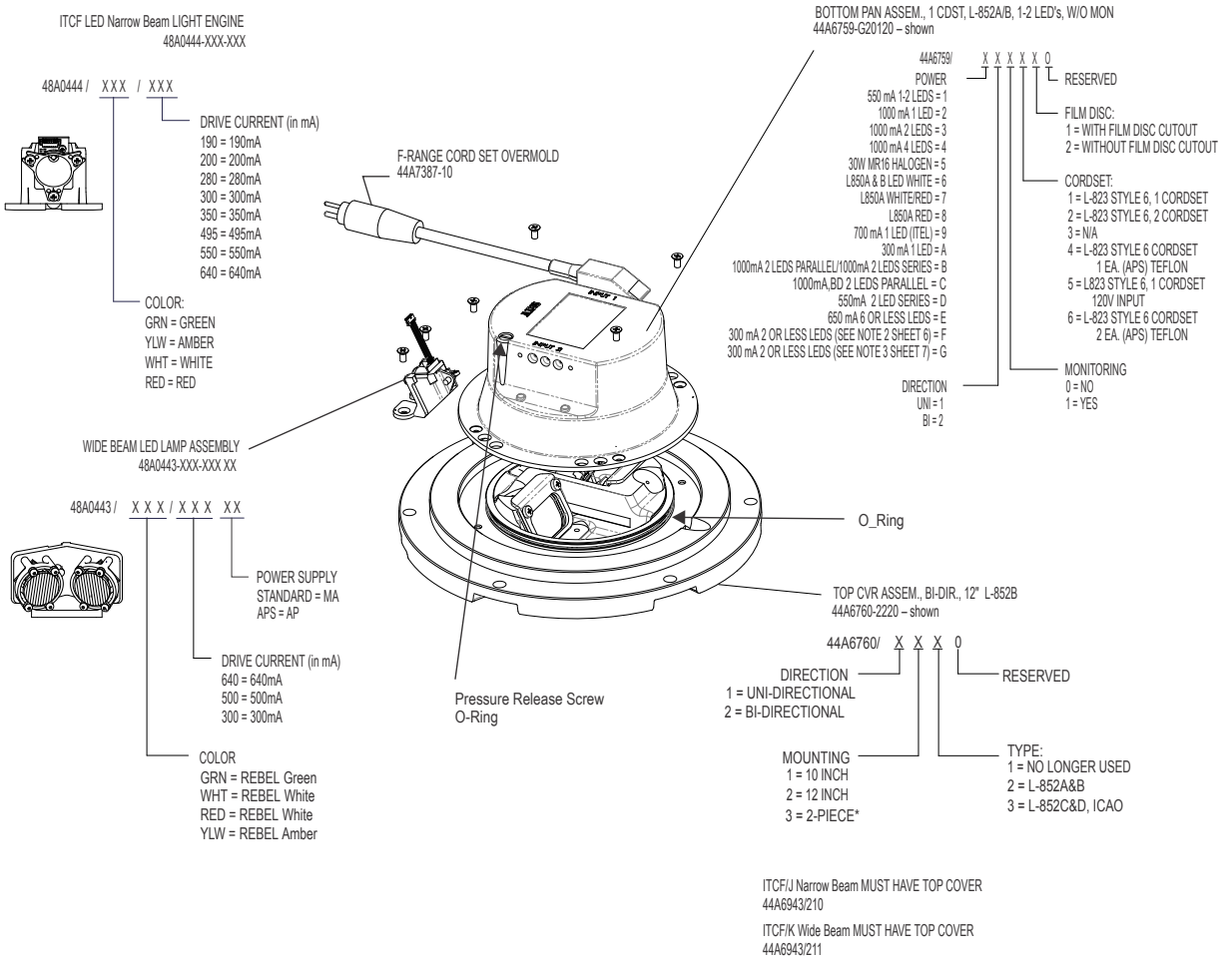


Figure 29: ITCF, Base Assembly Shown

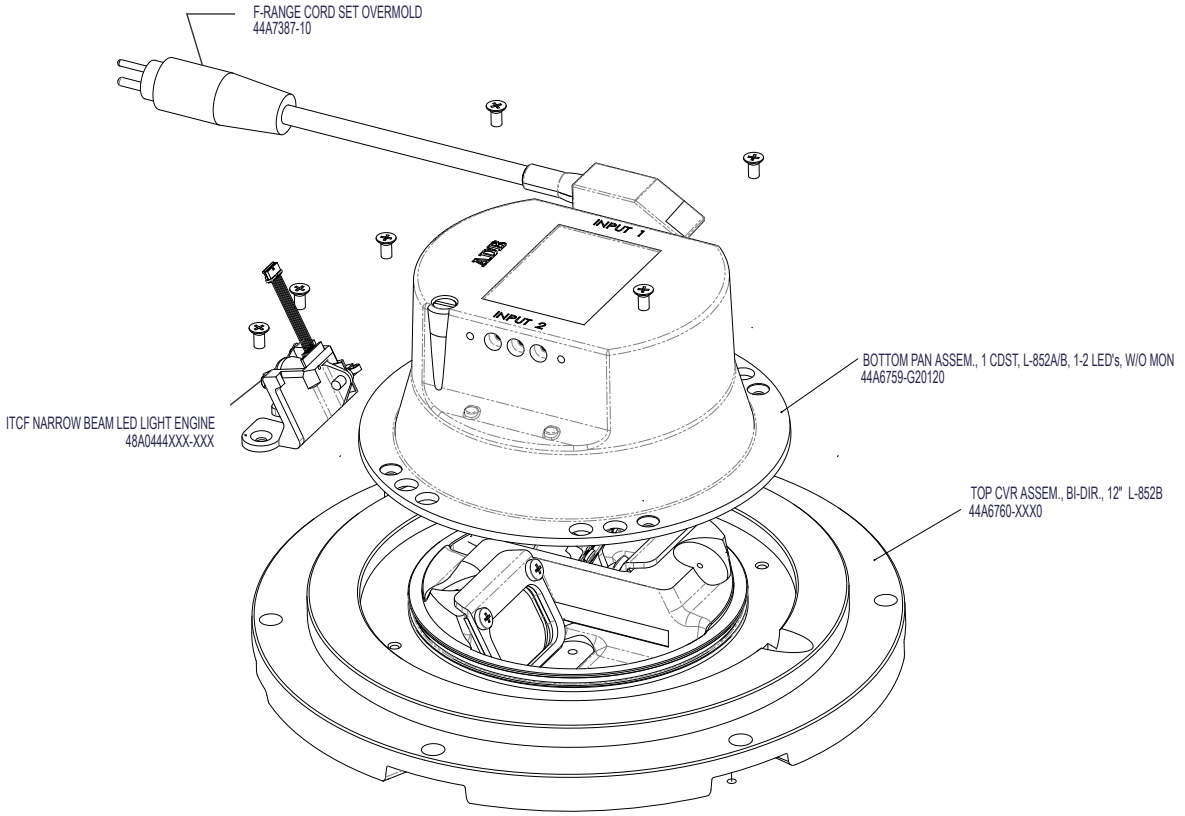


Figure 30: Typical 12" L-852D(L), Bi-Dir., Cordset Assembly Shown

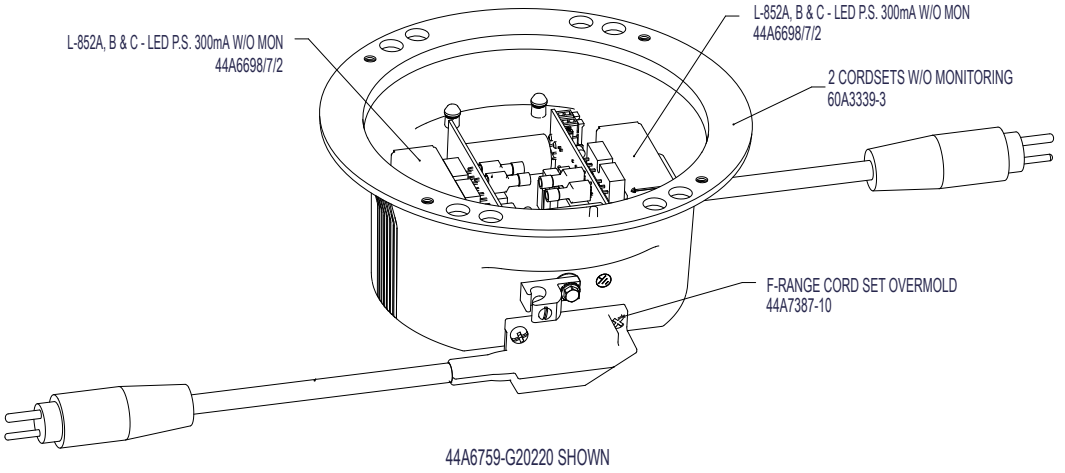


Figure 31: ITCF using a Intermediate Base Assembly

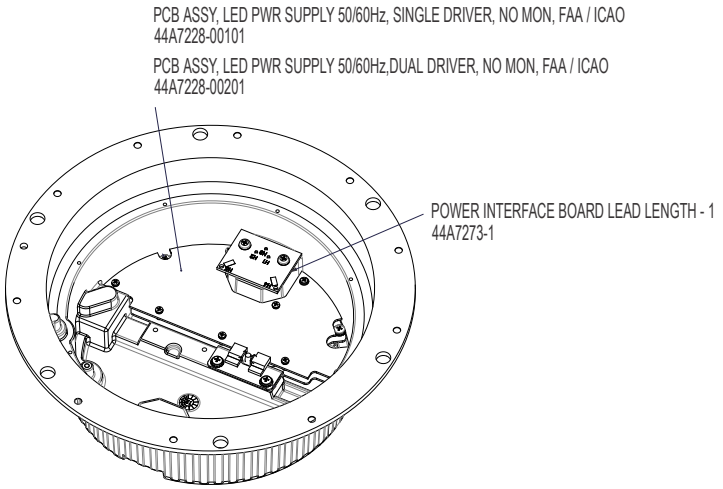


Figure 32: Wiring Diagrams for the Heaters

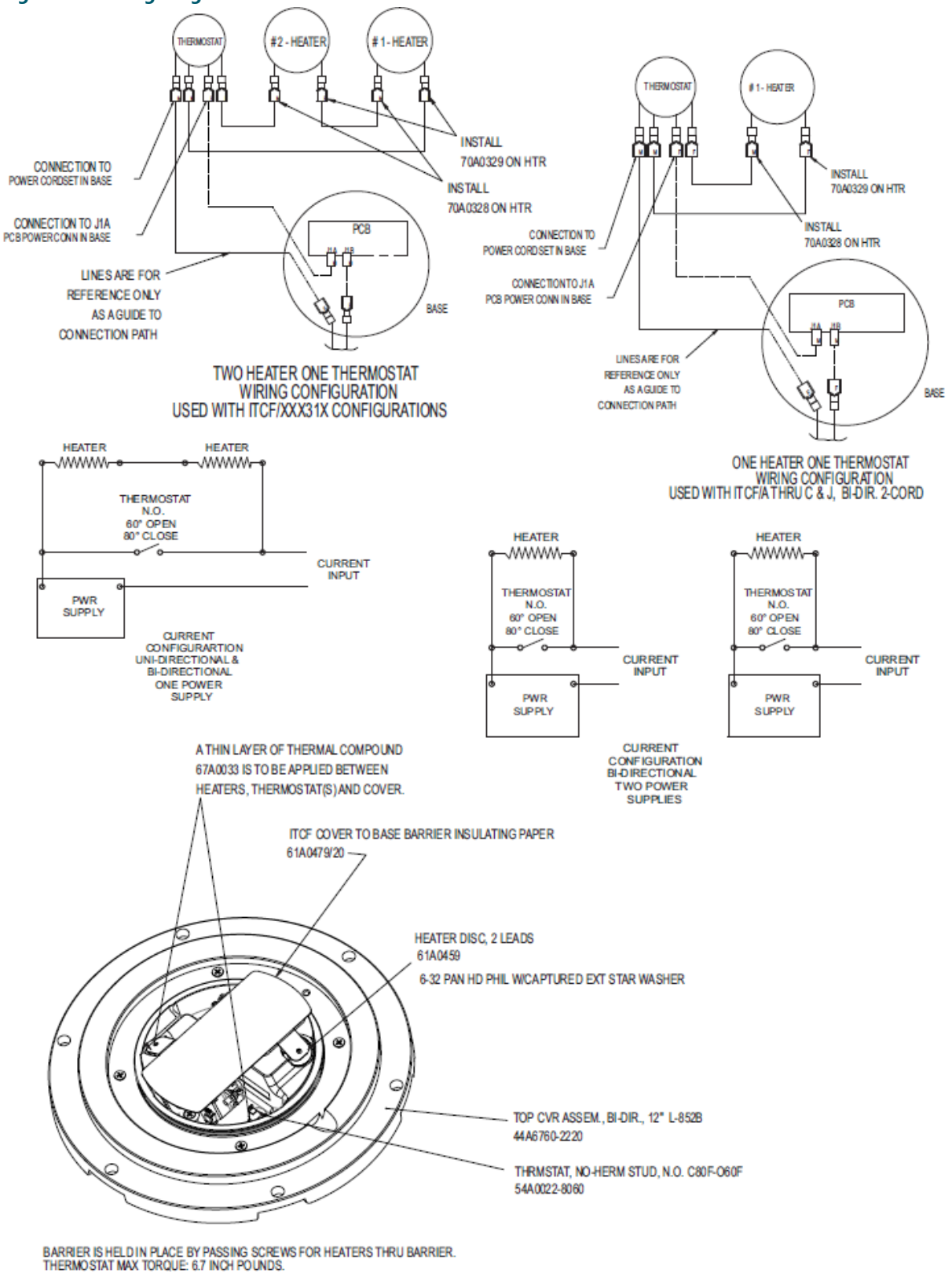
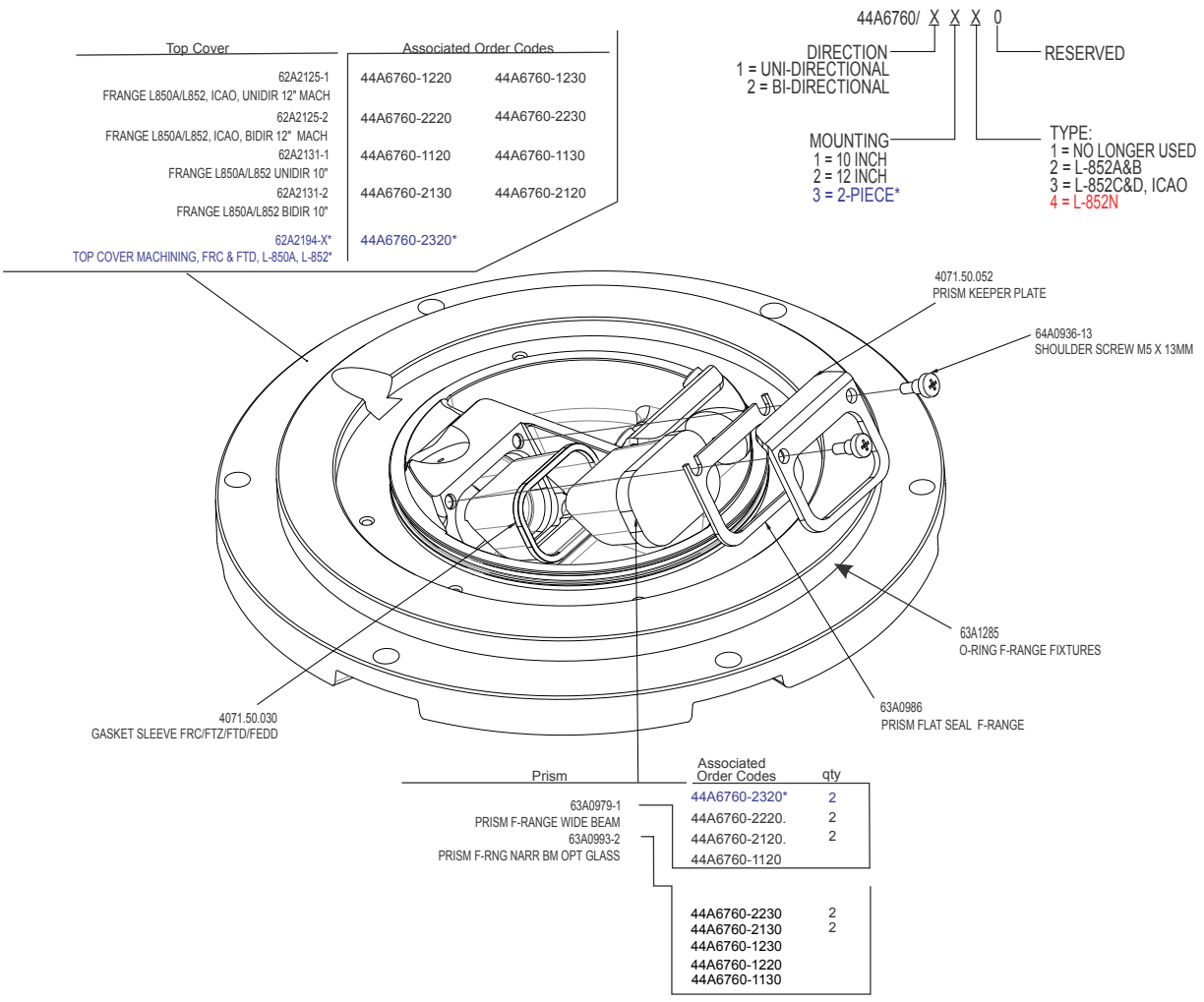


Figure 33: Top Cover Assembly 44A6760/XXX0



Note

L-852N is not an ITCF fixture but uses this top cover. 2-piece covers are in blue and are marked with an *.

Figure 34: L-852J(L) Top Cover Parts

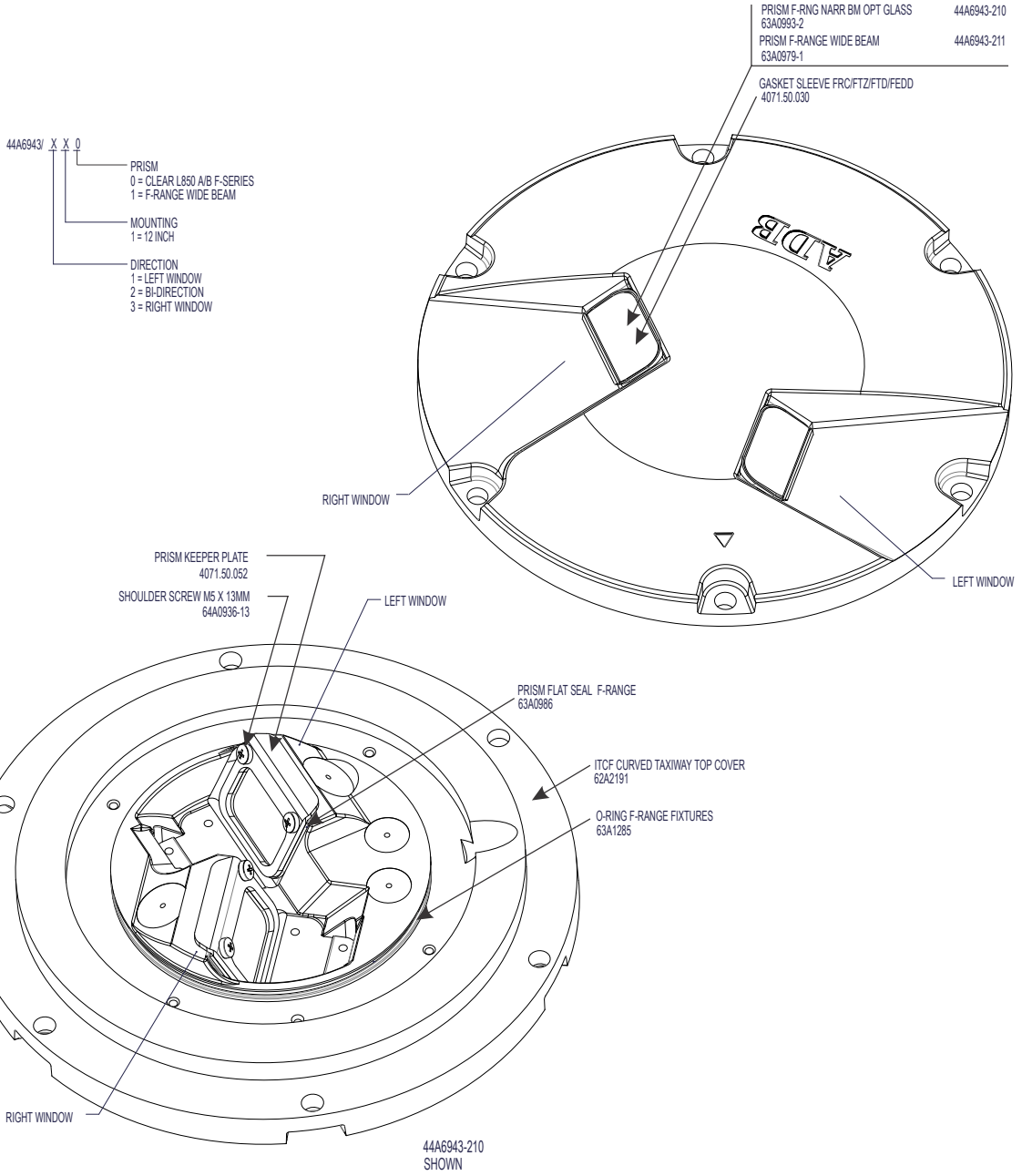
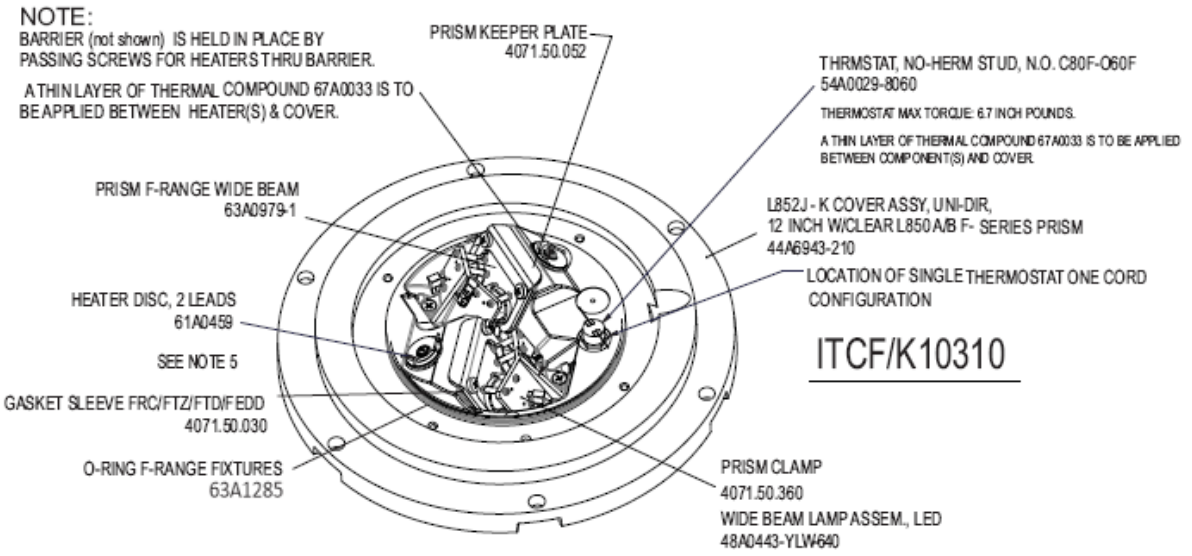


Figure 35: L-852K(L) Top Cover Parts



7.2 ITCF Spare Parts

Use the table below to create a sufficiently large stock of spare parts to maintain the IRGL unit. Consider acquiring approximately 10% spare final assemblies (with a minimum quantity of 1) for the total amount of equipment in the field. This allows for repairs to be made in the shop. Components that are more likely to need replacement, such as prisms, should be stocked at higher quantities, while PCB assemblies should be stocked in smaller quantities. If you have questions, contact your ADB representative.

Table 4: ITCF Parts

Part No.	Description	Figure	Note
61A0459	Arctic kit heater, Heater Disc, 2 Leads	Figure 31	
44A7387-10	Small Pan - cord set	Figure 28, Figure 30	
4072.42.351	Intermediate Pan cord set 2 Pin 18"	Figure 31	
70A0329	Cord set terminal, female disconnect	Figure 28, Figure 30	
48A0444-XXX-XXX	LED light engine, L-852A-C(L), J(L), green	Figure 28	
48A0443-XXX-XXX-XX	LED light engine, L-852D(L), K(L), green	Figure 28	
4072.42.380	AD Light Plug Bracket	Figure 31	
63A1285	O-ring, inner cover seal	Figure 33	
MS00001-376-01	O-ring, Top Inner Cover	Figure 31	
63B0267-011	O-ring, pressure release screw	Figure 28	
60A2602	Pressure release screw	Figure 28	
63A0979-1	Prism, L-852A(L), B(L), and J(L)	Figure 33	
63A0993-2	Prism, L852C(L), D(L), and K(L)	Figure 33	
4071.50.030	Prism gasket sleeve	Figure 33	

Table 4: ITCF Parts (Continued)

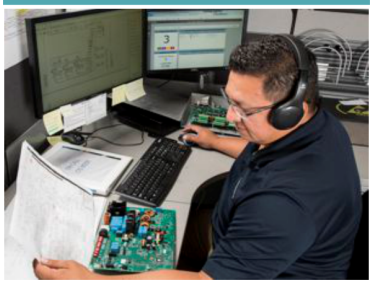
Part No.	Description	Figure	Note
4071.50.052	Prism keeper plate	Figure 33	
63A0986	Seal, prism keeper plate	Figure 33	
54A0022-8060	Thermostat	Figure 32	

Appendix A: SUPPORT

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

ADB SAFEGATE Support

Live Technical Support - Americas
If at any time you have a question or concern about your product, just contact ADB SAFEGATE's technical service department. Trained in all areas of system issues, troubleshooting, quality control and technical assistance, our highly experienced Technical support specialists are available 24 hours a day, seven days a week to provide assistance over the phone.
ADB SAFEGATE **Americas Technical Service & Support (US & Canada): +1-800-545-4157**
ADB SAFEGATE Americas Technical Service & Support (International): +1-614-861-1304
During regular business hours, you can also Chat with a Service Technician. We look forward to working with you!
Before You Call
When you have an airfield lighting or system control system problem it is our goal to support airfield maintenance staff as quickly as possible. To support this effort we ask that you have the following information ready before calling.



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

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

A.1 ADB SAFEGATE Website

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

A.2 Recycling

A.2.1 Local Authority Recycling

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

A.2.2 ADB SAFEGATE Recycling

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

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

All items returned must be clearly labeled as follows:

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

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

Company Addresses

ADB SAFEGATE	ADB SAFEGATE, Belgium: Leuvensesteenweg 585, B-1930 Zaventem Belgium
Contact: Tel.: +32 2 722 17 11, Fax: +32 2 722 17 64	Email: marketing@adbsafegate.com Internet: www.adbsafegate.com

Americas LLC	ADB SAFEGATE, Americas: 977 Gahanna Parkway, Columbus, OH 43230 USA
Contact: Tel.: +1 (614) 861 1304, Fax: +1 (614) 864 2069	Email: sales.us@adbsafegate.com Internet: www.adbsafegate.com

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Powering Your Airport Performance from Approach to Departure

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