



**RELIANCE PAPI, Precision Approach Path Indicator  
L-880(L)/PAPI and L-881(L)/APAPI**

## **Spare Parts**

**SP\_3058, Rev. B, 2021/04/14**

**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 further reserves the right to require the return of such goods to establish any claim.

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

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 of ADB SAFEGATE manufacture 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.

### FAA Certified product installed in the United States and purchased or funded with monies through the Airport Improvement Program (AIP) installations guarantee

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 L858(L) Airfield Guidance Signs 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).

ADB SAFEGATE LED light fixtures (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).



## Note

See your sales order contract for a complete warranty description.

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## Liability

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### 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.

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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 RELIANCE PAPI Overview

This manual provides instructions for installation, operation and maintenance of the RELIANCE™ Precision Approach Path Indicator (PAPI) LED system.

The RELIANCE PAPI systems provide visual approach path guidance to pilots of landing aircraft.



## 1.1 LED PAPI / APAPI

### Compliance with Standards

<b>FAA:</b>	L-880(L) / L-881(L) AC 150/5345-28 (Current Edition). ETL Certified.
<b>ICAO:</b>	PAPI / APAPI Annex 14, Volume 1 (Current Edition)
<b>T/C:</b>	PAPI / APAPI Transport Canada TP 312 par. 5.3.16.12 and Appendix 5B, Figure B-19.
<b>EASA:</b>	CS ADR-DSN.M.645
<b>MOS:</b>	Part 139, para. 9.9.4.6
<b>CE:</b>	DIRECTIVE 2014/35/EU: LVD annex IV & with DIRECTIVE 2014/30/EU: EMC annex IV.
<b>Rosaviation/IAC:</b>	AP-170 (Aviation rules. Part 170).

### Uses

The RELIANCE™ LED PAPI (Precision Approach Path Indicator) system uses a multi-LED array to form a single light channel on each light unit to provide the pilot precise visual information, enabling the approach procedure to be performed with the utmost accuracy and safety.

Type L-880(L) PAPI system consists of four light units located at the side of the runway adjacent to the origin of the glide path. The nominal glide slope angle is midway between the angular settings of the central pair of the four units. If an aircraft is on the correct approach path, the pilot will see two red and two white light indicators. If the aircraft approach is too high, an increased number of white light indicators will be seen. If the approach is too low, the pilot will note an increased number of red light indicators.

Type L-881(L) APAPI system is an abbreviated PAPI system. It is identical to the L-880(L) PAPI system, except it consists of only two light units (instead of four). The nominal glide slope is midway between the angular settings of the two units, and when the pilot is on or close to the correct approach path, the unit nearest the runway will be seen as red and the other unit as white.

Style A (voltage powered) system is for use with 120 VAC or 240 VAC, 50/60 Hz voltage input. Style B (current powered) system is for use with 6.6 A or 20 A, 50/60 Hz series current input from a CCR.

An electronic inclinometer assembly, which is a mercury-free device, is provided on each light unit to monitor the aiming angle of the light unit. FAA certified PAPIs are designed to de-energize all light units if the optical pattern of any light unit is raised between 0.5° and 1.0° or lowered between 0.25° and 0.5° with respect to the aiming angle of the light unit. For ICAO and TP312 compliant units, this feature is factory disabled, but can easily be enabled if desired.

## Electrical Supply

For Style A (Voltage Powered) systems, power is supplied to the primary light unit and the primary light unit provides power to the secondary light units. For Style B (Current Powered) systems, power is supplied to each light unit via a separate 6.6/6.6 A or 20/6.6 A, 200 W isolation transformer for each light unit.

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### Style A (Voltage Powered)

Input Voltage	240 VAC +/-10%, 50-60 Hz or 120 VAC +/-10%, 50/60 Hz <sup>1</sup>
L-880(L) PAPI (4 box):	528 VA max.
L-881(L) APAPI (2-box):	264 VA max.

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### Style B (Current Powered)

L-880(L) PAPI (4-box) – Total CCR Load:	630 VA max <sup>2</sup>
L-881(L) APAPI (2-box) – Total CCR Load:	330 VA max <sup>2</sup>

#### Notes

<sup>1</sup> Voltage at input of PAPI Primary Light Unit. Source power can be a maximum of 305 m (1000 ft) away using 6 mm<sup>2</sup> (AWG 10) wire.

<sup>2</sup> Includes PAPI light units and isolation transformers.



## 2.0 RELIANCE PAPI Parts

To order parts, call ADB SAFEGATE Customer Service or your local representative. This section provides schematic drawings, along with part numbers. Refer to the [Wiring Diagrams](#).



### Note

Contractor Kits: See [Field Cabling Diagrams](#).

### Ordering Code

L P L  /    0 0

#### Specification

F = FAA  
I = ICAO/TP312<sup>1</sup>

#### Power

A = PAPI A, 240 VAC or 120 VAC, 50/60 Hz (voltage)<sup>2</sup>  
B = PAPI B, 2.8-6.6 A, 50/60 Hz (current)  
R = PAPI B, 2.8-6.6 A, 50/60 Hz (current) redundant

#### Type

2 = 2 Light Units, L-881(L) APAPI  
4 = 4 Light Units L-880(L) PAPI

#### Housing

0 = Aluminum (Standard)  
1 = 316 Stainless Steel

#### Operation/Control Mode<sup>3</sup>

0 = Style B (Current) Operation  
1 = Style A (Voltage) Operation, Current Sensing Night Control Mode  
2 = Style A (Voltage) Operation, Current Sensing Day/Night Control Mode  
3 = Style A (Voltage) Operation, External On/Off Control Mode

#### Notes

- 1 ICAO/TP312 PAPI units are provided with the tilt switch function disabled. This can easily be enabled in the field.
- 2 All Style A units are factory preset to operate from a voltage range of 240 VAC  $\pm$ 10%. The system can be easily modified in the field for 120 VAC  $\pm$ 10%.
- 3 See Operation/Control Mode table for details.

### Optional Touchpad Cover

44A7564

Optional touchpad cover provides added protection for the LED display. See user manual for installation instructions.

### Baffle Kits

94A0701 / □□

#### Type

2 = 2 Light Units L-881(L) APAPI  
 4 = 4 Light Units L-880(L) PAPI

#### Baffle Location

L = Baffle on left side  
 R = Baffle on right side  
 B = Baffle on both sides

#### Notes

- Provides a 0 to 5 degree cut-off angle to modify the horizontal light beam coverage for obstacle avoidance in the approach area. See manual for field adjustment.
- The PAPI baffle can only be installed at the factory. It cannot be installed in the field.

### Longer Length Power Cord

94A0690 / □□

#### Power

A = Style A (Voltage)  
 B = Style B (Current)

#### Type

2 = 2 Light Units L-881(L) APAPI  
 4 = 4 Light Units L-880(L) PAPI

#### Notes

- Standard power cord length is 8 ft (2.4 m) with 7 ft (2.1 m) extending outside the enclosure. This kit provides a longer 18 ft (5.5 m) power cord that can be cut-to-length on site.
- Use 94A0690/XX/R for Style B Redundant Circuit systems.

### Contractor Kit

94A0716 / □□

#### Power

A = Style A (Voltage)  
 B = Style B (Current)

#### Type

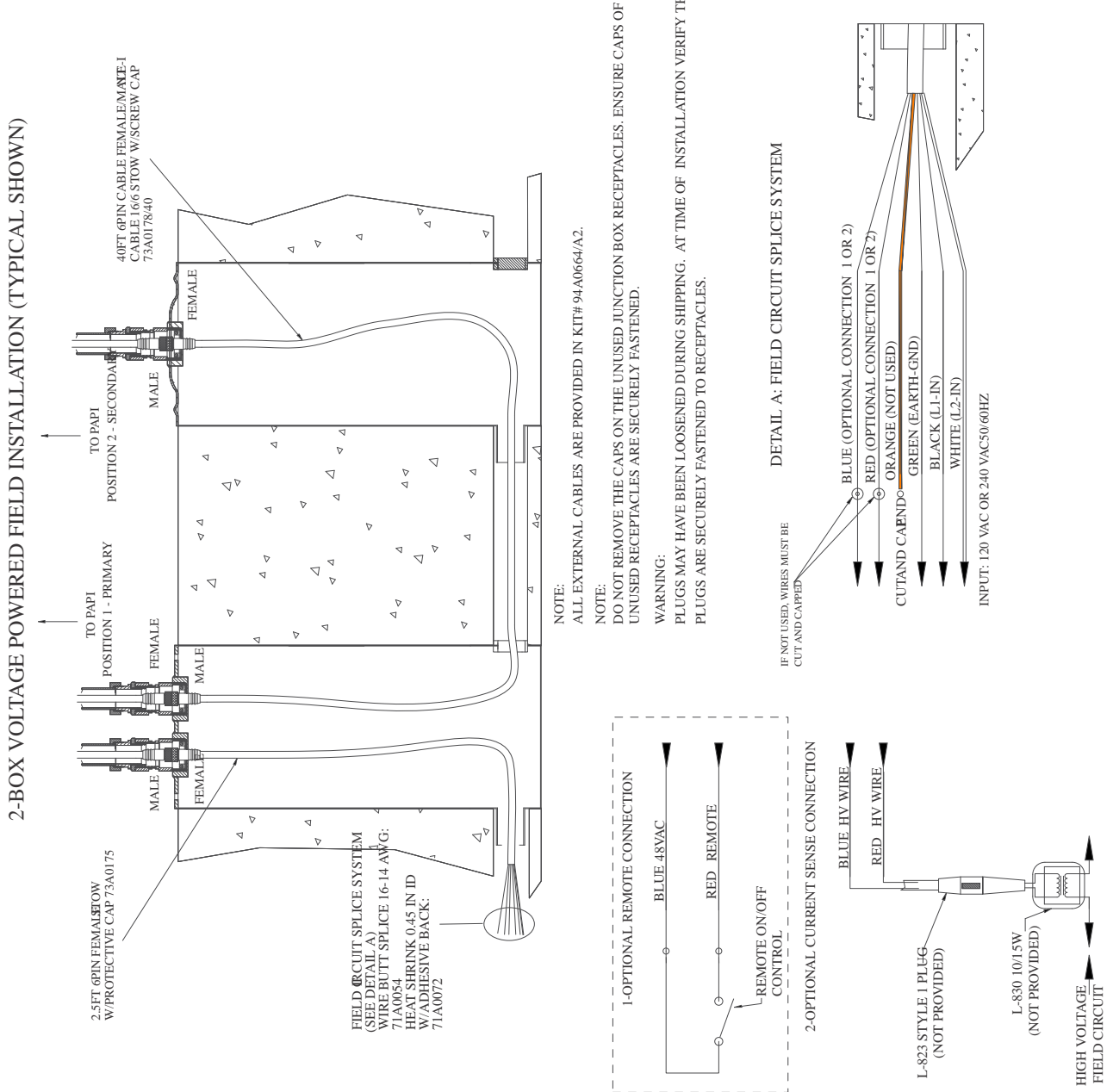
2 = 2 Light Units L-881(L) APAPI  
 4 = 4 Light Units L-880(L) PAPI

#### Notes

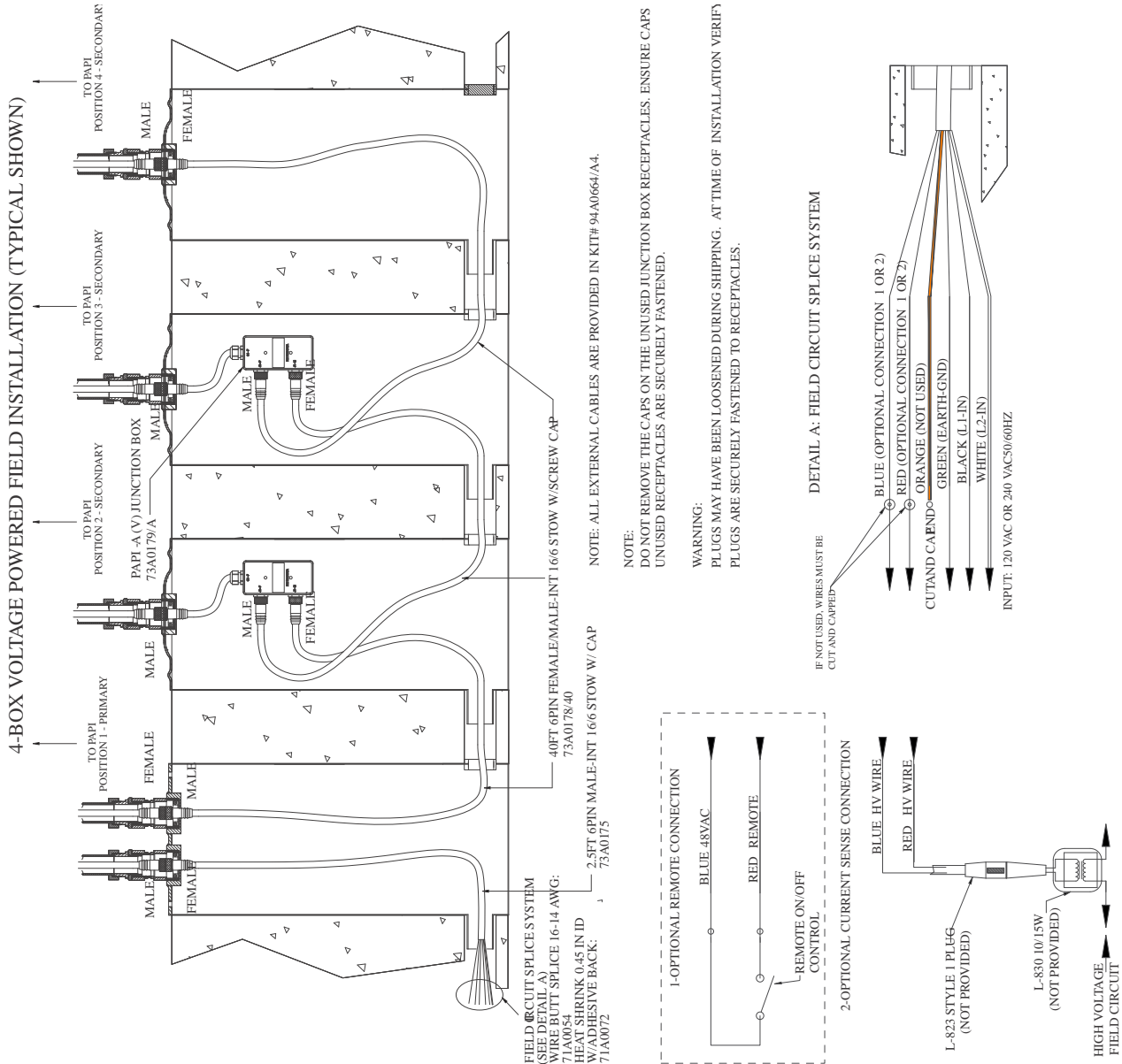
- Kit provides the following materials typically contractor supplied: 2 in EMT, flexible conduit, and fittings for installation.
- Use 94A0716/XX/CAN for contractor kits used with longer length 18 ft (5.5 m) Power Cord Kit 94A0690/XX.
- Use 94A0716/XX/R for contractor kits used with Style B Redundant Circuit systems.
- Use 94A0716/XX/CAN/R for contractor kits used with Style B Redundant Circuit systems and longer length 18 ft (5.5 m) Power Cord Kit 94A0690/XX/R.

## 2.1 Field Cabling Diagrams

Figure 1: Field Cabling Diagram - Voltage Powered (2 Box)



**Figure 2: Field Cabling Diagram - Voltage Powered (4 Box)**



**Figure 3: Field Cabling Diagram - Voltage Powered Junction Box (4 Box)**

73A0179/A: JUNCTION BOX FOR PAPI POSITION 2 & 3 SECONDARY LIGHT UNITS ( FOR VOLTAGE POWERED LIGHT UNITS ONLY

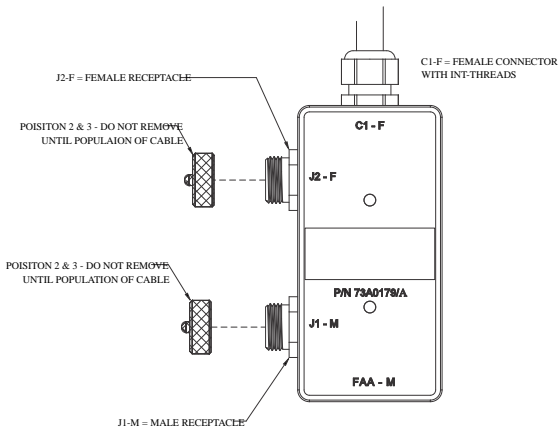
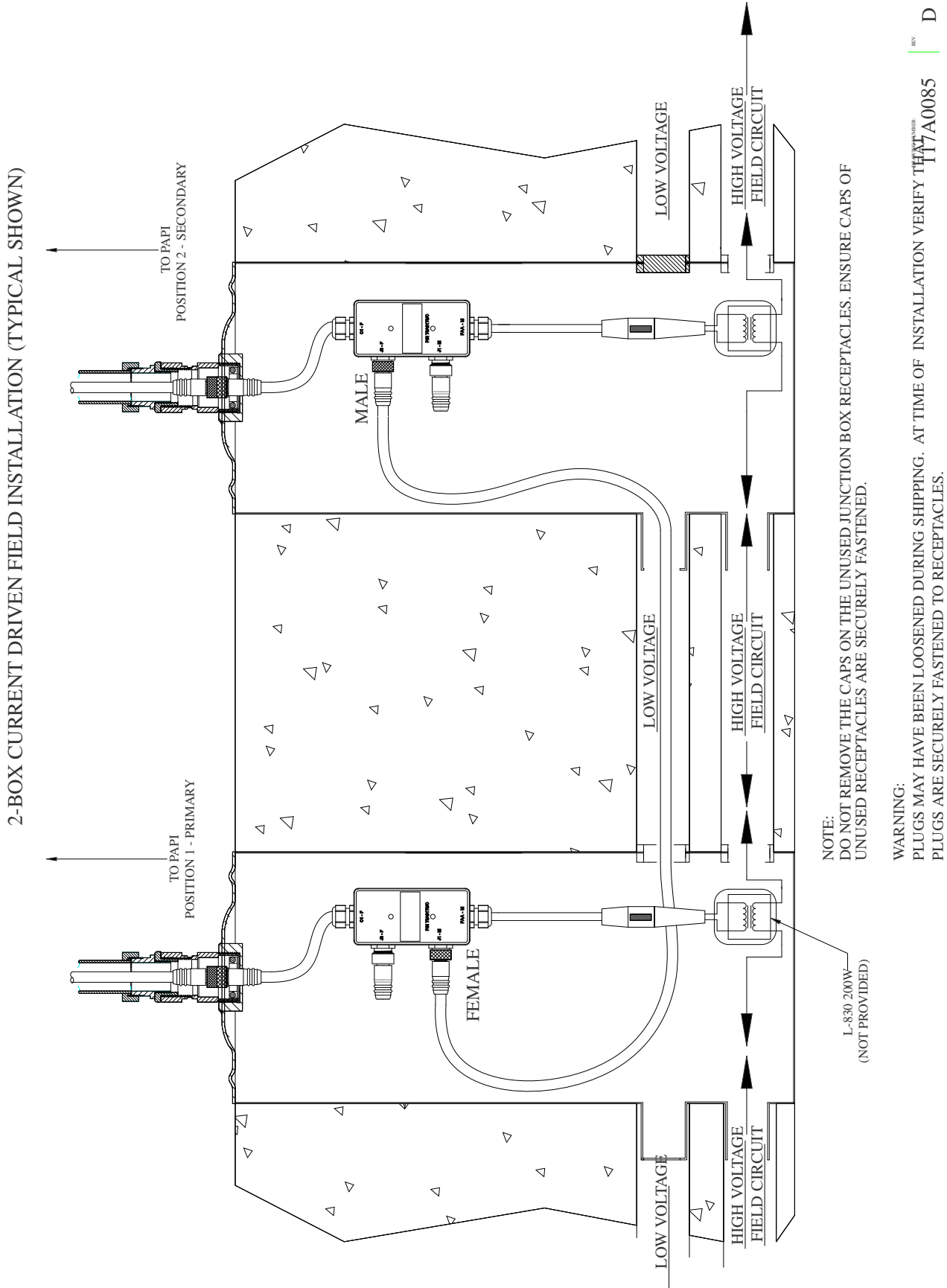


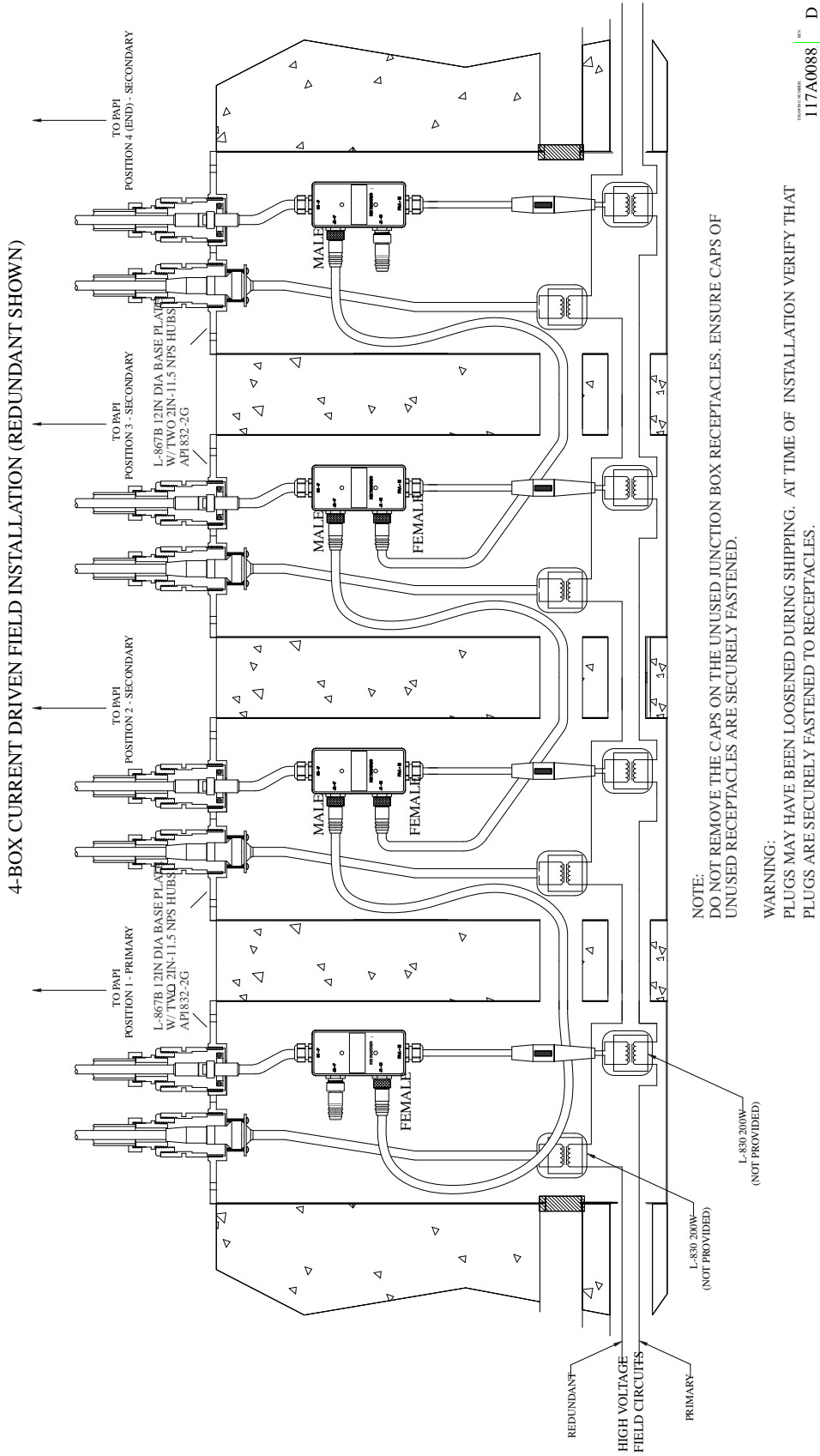
Figure 4: Field Cabling Diagram - Current Powered (2 Box)







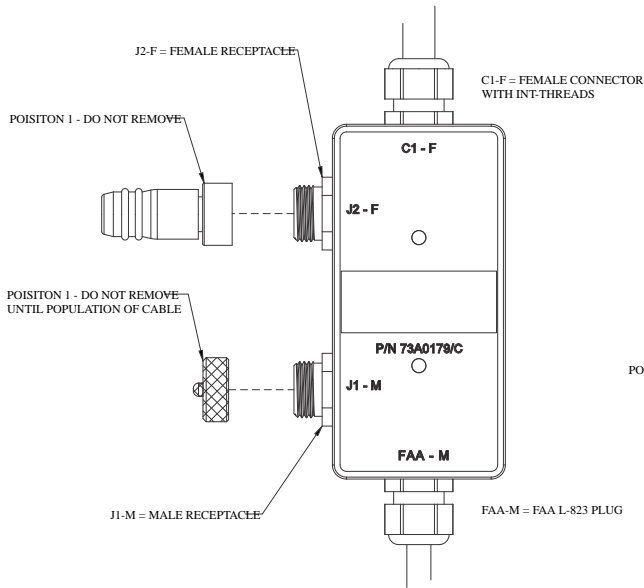
**Figure 7: Field Cabling Diagram - Current Powered with Redundant Circuit (4 Box)**



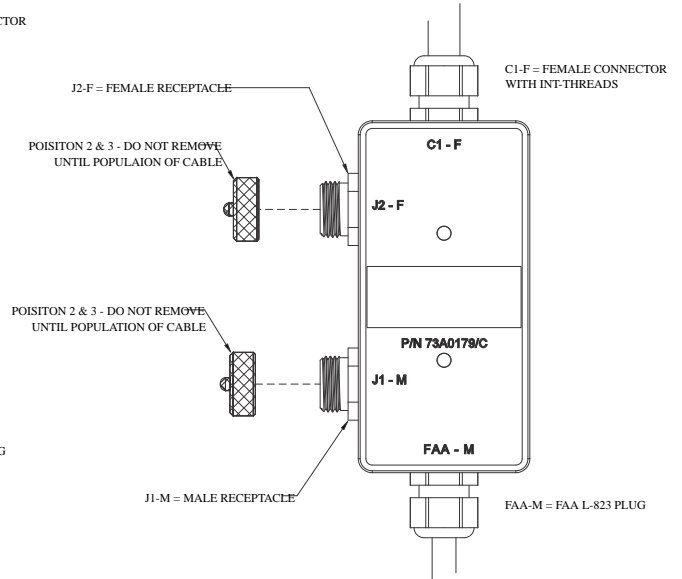


### Figure 8: Field Cabling Diagram - Current Powered Junction Box (2 & 4 Box)

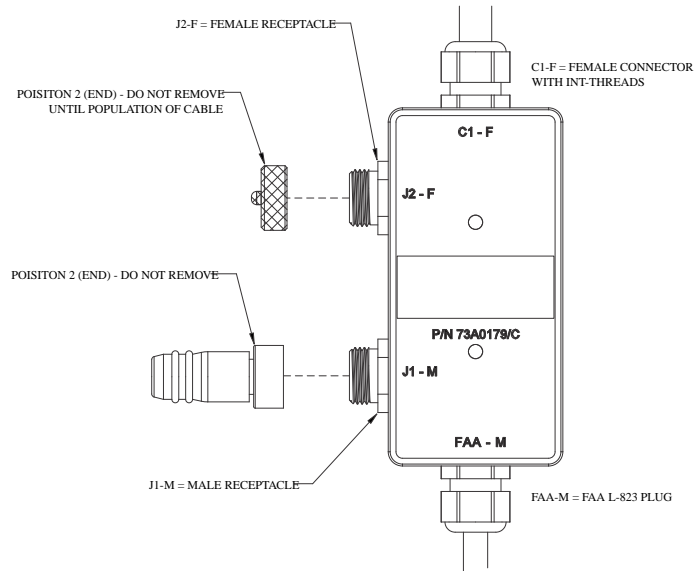
73A0179/C1: JUNCTION BOX FOR PAPI POSITION 1 PRIMARY LIGHT UNIT (2-BOX AND 4-BOX)  
FOR CURRENT POWERED LIGHT UNITS ONLY



73A0179/C: JUNCTION BOX FOR PAPI POSITION 2 & 3 SECONDARY LIGHT UNITS (4-BOX)  
FOR CURRENT POWERED LIGHT UNITS ONLY



73A0179/C2: JUNCTION BOX FOR PAPI POSITION 2 SECONDARY LIGHT UNIT (2-BOX)  
73A0179/C2: JUNCTION BOX FOR PAPI POSITION 4 SECONDARY LIGHT UNIT (4-BOX)  
FOR CURRENT POWERED LIGHT UNITS ONLY



## 2.2 Spare Parts

### Spare Light Unit

94A0707 /

#### Specification

F = FAA  
 I = ICAO/TP312

#### Power

A = PAPI A, 240 VAC or 120 VAC, 50/60 Hz (voltage)  
 B = PAPI B, 2.8-6.6 A, 50/60 Hz (current)  
 R = PAPI B, 2.8-6.6 A, 50/60 Hz (current)  
 redundant

#### Type

2 = 2 Light Units, L-881(L) APAPI  
 4 = 4 Light Units L-880(L) PAPI

#### Housing

0 = Aluminum (Standard)  
 1 = 316 Stainless Steel

#### Operation/Control Mode<sup>3</sup>

0 = Style B (Current) Operation  
 1 = Style A (Voltage) Operation, Current Sensing Night  
 Control Mode  
 2 = Style A (Voltage) Operation, Current Sensing  
 Day/Night Control Mode  
 3 = Style A (Voltage) Operation, External On/Off Control  
 Mode

#### Light Unit Position

1 = Position 1<sup>1</sup>

#### Notes

<sup>1</sup> Only position 1 is available as spare. The light unit position is configurable by DIP switch.

**Table 1: Spare Parts**

Description	Part No.
Mounting Flange	62B0107-2
Frangible Coupling	44B0180
LED Light Engine Replacement Kit (See <a href="#">Table 2</a> )	94A0665 <sup>1</sup>
Complete PAPI Light Box Assembly	94A0707-XXXXXX1 <sup>2</sup>
Front Heated Glass Replacement Kit	94A0674/1
Inclinometer Assembly	AS00124-000-01
LED PAPI Rear Cover Seal	63A1169
6-Pin Input Power Cord (8 ft) Standard	73A0180
6-Pin Input Power Cord (18 ft) Optional - Typically used with Transport Canada TP312 Installation	73A0180/18

#### Notes

<sup>1</sup> See LED Light Engine Replacement Kit 94A0665 parts.

**Table 1: Spare Parts (Continued)**

Description	Part No.
<sup>2</sup> Only position 1 is available as spare. The light unit position is configurable by DIP switch. See Spare Light Unit Codification for complete part code.	

**Table 2: LED Light Engine Replacement Kit 94A0665 Parts**

Description	Qty
LED Heat Sink Assembly FAA/ICAO 34 LEDs	1
LED Desiccant Mounting Slide	2
LED PAPI Desiccant Heat Shield	1
Humidity Indicating Plug	1
56 G Molecular Sieve Packet TYVEK 1056D	2
LED PAPI Rear Cover Seal	1
1/4-20 X 7/8 Socket Head Cap Screw (SHCS) Stainless Steel (SS)	12
6-32 X 1/2 PAN HD PHIL	4
1/4 SPLIT LOCKWASHER	12
#6 INT LOCKWASHER	4
Wire Tie 0.13x8.5 inch Black UV Resistant	4

### 2.2.1 Voltage Powered Style A Only

Description	Part No.
Photocell (24 VAC/VDC)	31A0022
Photocell Receptacle	44A7397
Input Power Board (Voltage Powered) (Primary)	44A7392-1
Input Power Board (Voltage Powered) (Secondary)	44A7392-2
Control Board Replacement Kit (primary)	94A0666/10
Control Board Replacement Kit (secondary)	94A0666/20
External Cable Junction Box 3-way	73A0179-A
External Cable Junction Box 4-way	73A0179-C
Low Voltage Mini-Link cable 40 FT	73A0178-40

### 2.2.2 Current Powered Style B Only

Description	Part No.
Input Power Board (Current Powered) (6)	44A7392-3
Control Board Replacement Kit	94A0666/30
External Cable Junction Box 3-way	73A0179-A
External Cable Junction Box 4-way	73A0179-C
Low Voltage Mini-Link cable 40 FT	73A0178-40

## 2.2.3 Fuses

**Table 3: Control Board Fuse**

Description	Part No.
F1, F2 Fuse .750A 125V Fast	47A0243
F5 Fuse 2A 125V Fast	47A0244

**Table 4: Input Power Board Fuses (Voltage Powered ONLY)**

Description	Part No.
(F3, F4) FUSE 250V SLO-BLO 3AG 0.5A	47A0233
(F1, F2) FUSE 250V UL SLO 5X20MM, 3A	47A0234

## 2.2.4 Desiccant Pack Replacement

Description	Part No.
Desiccant Pack Replacement (includes QTY (2) desiccant packs, mounting hardware and seal)	61A0505S



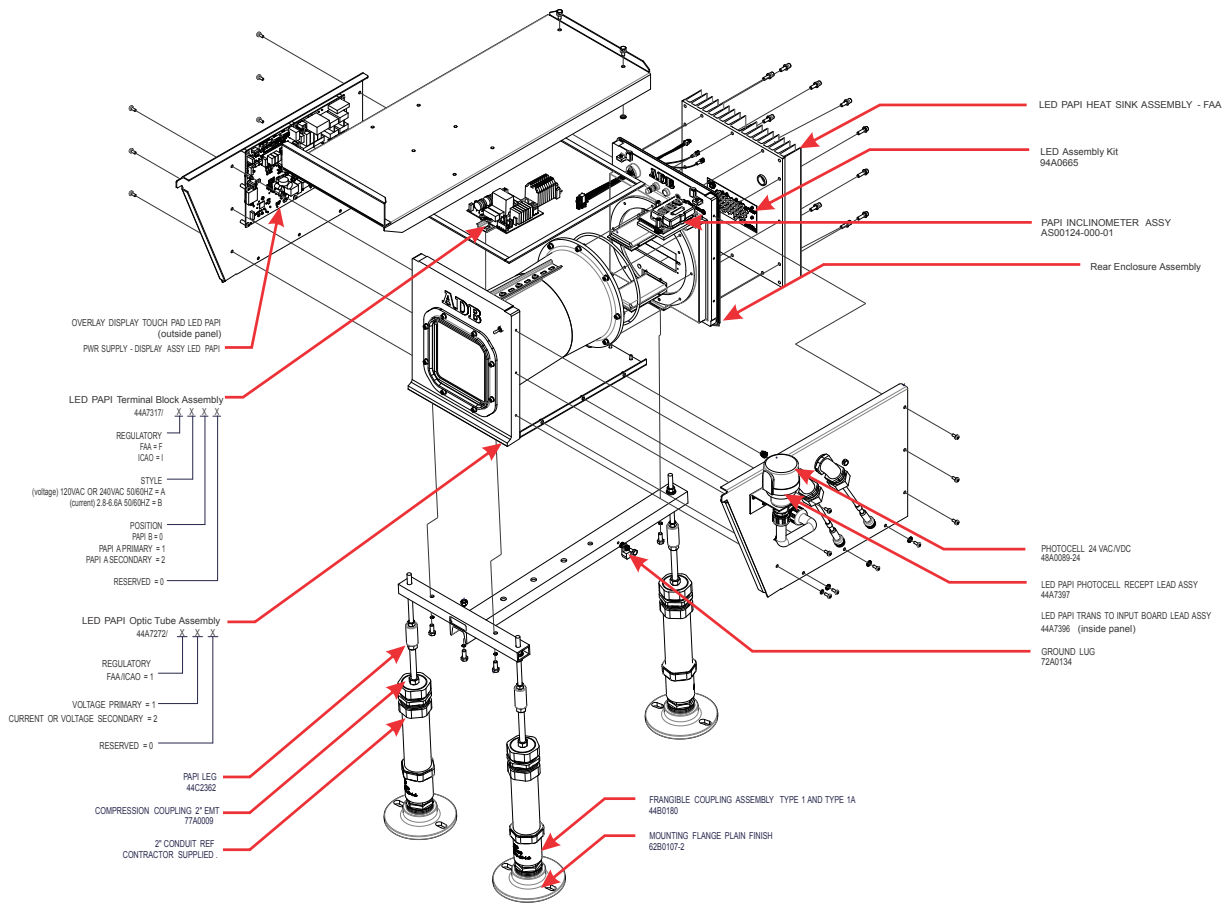
### Note

The 94A0674/1 Front Glass Replacement Kit and the 94A0665 LED Light Engine Replacement Kit both include the desiccant pack assemblies required for installation. The only reason to replace the desiccant pack only would be if the sealed area is compromised.

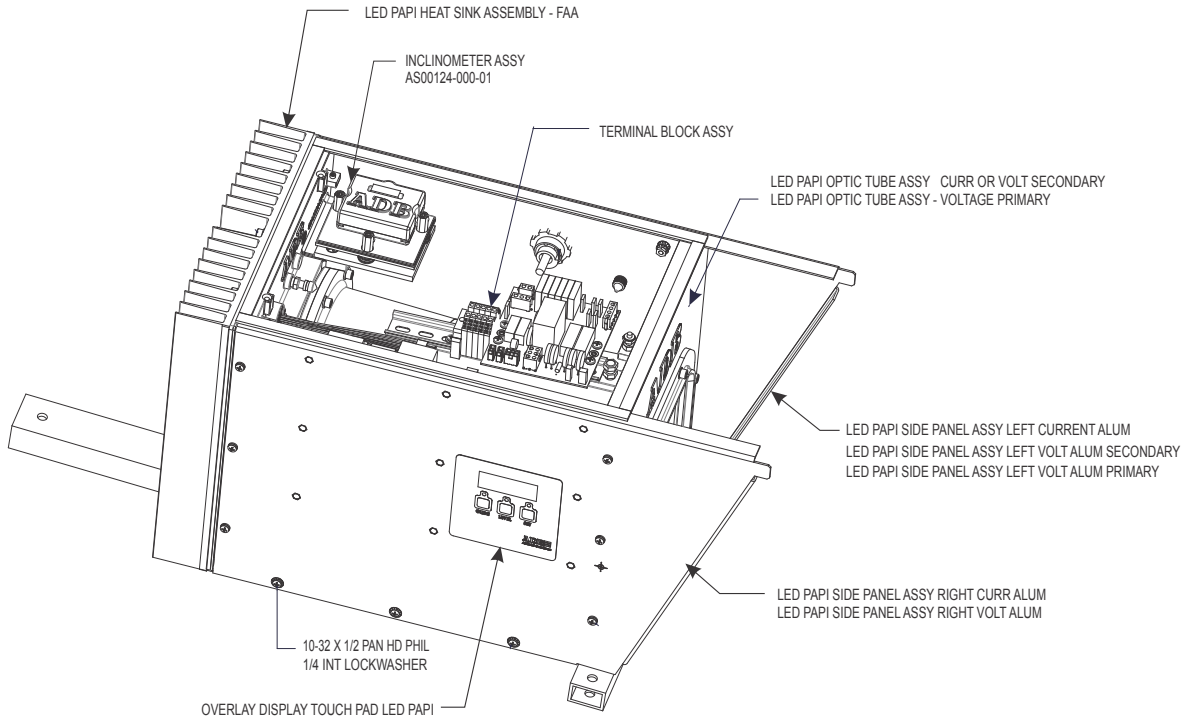
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## 2.3 Spare Part Drawings

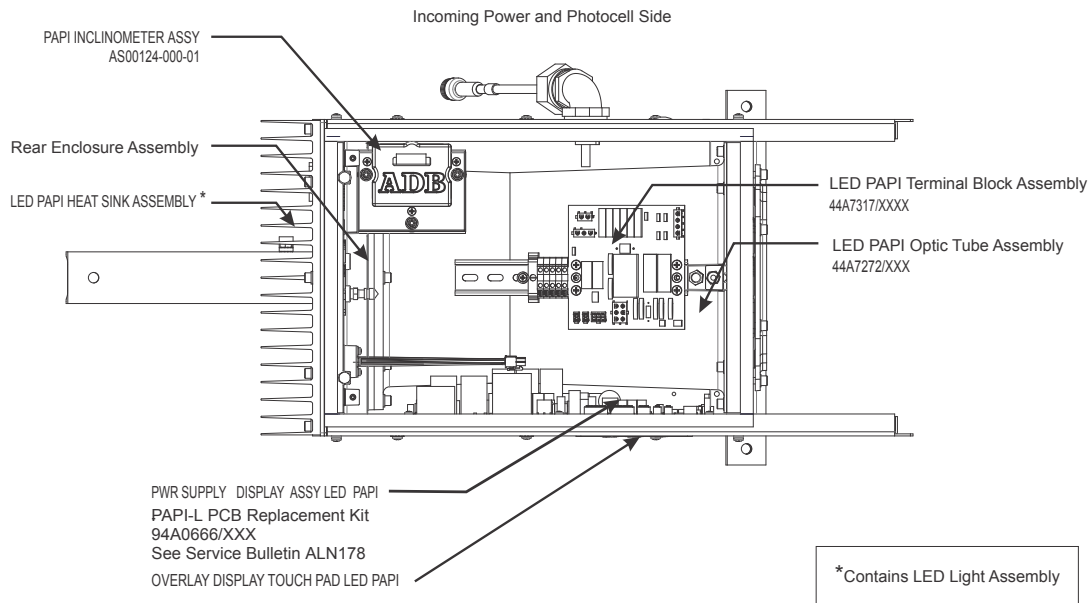
Figure 9: RELIANCE PAPI Exploded View - Assemblies



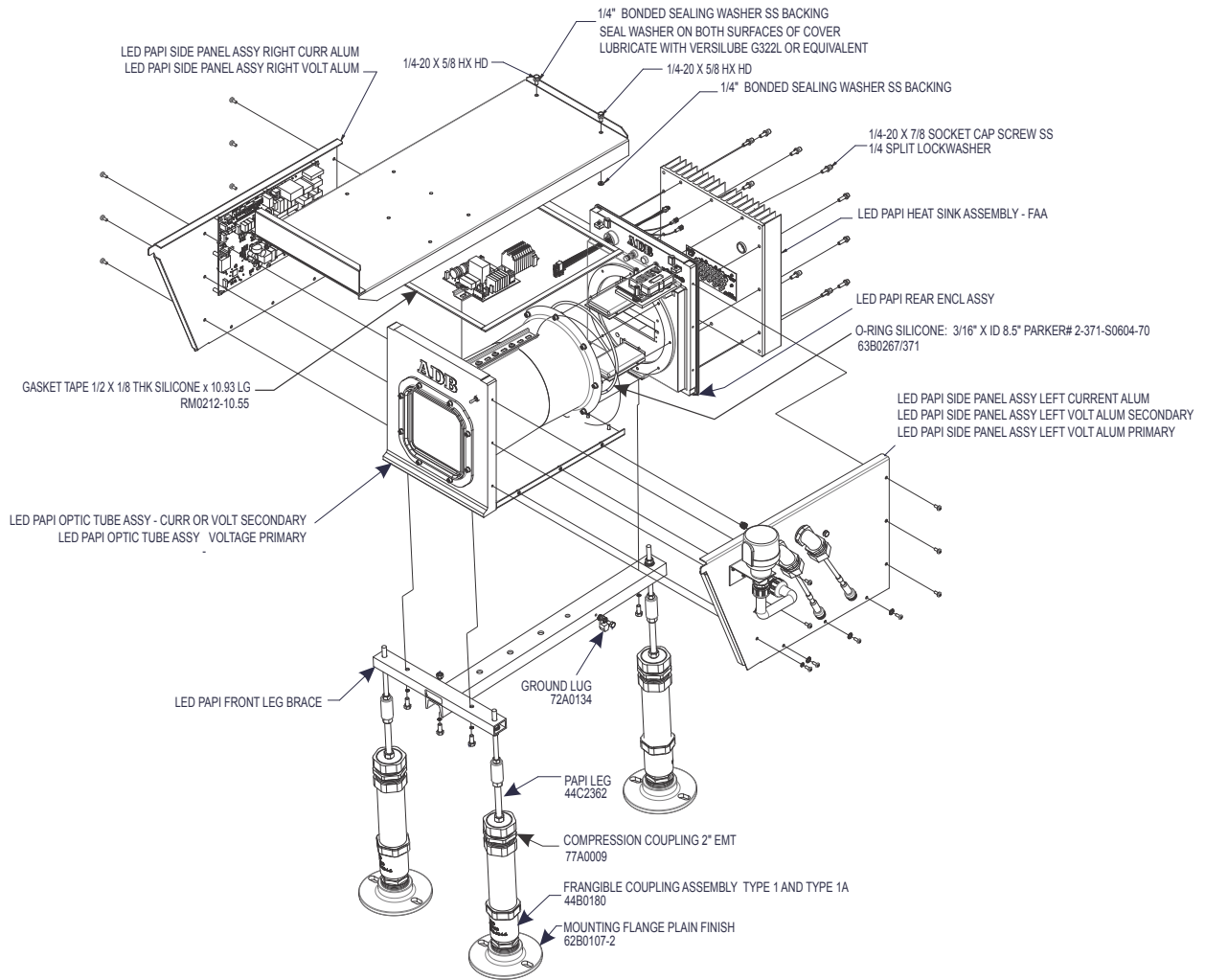
**Figure 10: RELIANCE PAPI Side View Assembly**



**Figure 11: RELIANCE PAPI Assembly Top View**



**Figure 12: RELIANCE PAPI Exploded View - Hardware**







## 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](http://www.adbsafegate.com), or contact ADB SAFEGATE Support via email at [support@adbsafegate.com](mailto: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](http://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

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<p>Americas LLC</p>	<p>ADB SAFEGATE, Americas: 977 Gahanna Parkway, Columbus, OH 43230 USA</p>
<p>Contact: Tel.: +1 (614) 861 1304, Fax: +1 (614) 864 2069</p>	<p>Email: <a href="mailto:sales.us@adbsafegate.com">sales.us@adbsafegate.com</a> Internet: <a href="http://www.adbsafegate.com">www.adbsafegate.com</a></p>
<p>ADB SAFEGATE Sweden AB</p>	<p>ADB SAFEGATE, Sweden: Djurhagegatan 19 SE-213 76 Malmö Sweden</p>
<p>Contact: Tel.: +46 (0)40 699 17 00, Fax: +46 (0)40 699 17 30</p>	<p>Email: <a href="mailto:marketing@adbsafegate.com">marketing@adbsafegate.com</a> Internet: <a href="http://www.adbsafegate.com">www.adbsafegate.com</a></p>
<p>ADB SAFEGATE Airfield Technologies Ltd. China</p>	<p>ADB SAFEGATE, China: Unit 603, D Block, CAMIC International Convention Center, No 3, Hua Jia Di East road, ChaoYang district, Beijing 100102 P.R. China</p>
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