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REVISION K
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Instruction Manual

PRO APF Series LED Style III
Taxiway Centerline Light (TCL)
L-852A,B,C,D,J&K
8-inch aluminum optical housing with ductile iron support ring

EATON Crouse-Hinds Series
1200 Kennedy Road
Windsor, CT 06095

For Parts or Technical Service Call (860) 683-4300

Instruction Manual
Pro APF Series LED 8”
FAA Taxiway Centerline Light L-852A, B, C, D, J&K

1 Revisions

Revision	Issue/Reissue Letter Number	Description	Created/ Updated	Checked	Approved
-	-	**SEE RECORD COPY FOR PRIOR REVISIONS.**	-	-	-
J	**A217-060**	**CHANGED EATON LOGO, SECTION 10: ADDED 21611-5, REVISED ITEM NUMBERS RESPECTIVELY.**	**3/21/17**	**IM**	**PG**
K	**A219-005**	**REVISED COPYRIGHT TO 2019; UPDATED SECTION 7 FOR 410 SS HEAT TREATED WITH BLACK OXIDE COATING BOLTS DETAIL; UPDATED SECTION 8.2 FOR TORQUE CHANGED TO 28 FT-LBS, P/N 21716 WAS 21715; SECTION 10, ITEM 20 WAS 21715-XX, UPDATED BOLT LENGTHS TABLE FOR P/N 21716-XX.**	**3/8/19**	**EB**	**PG**

2 Limited Product Warranty

Warranty

Refer to Eaton’s Crouse-Hinds Airport Lighting Products Terms and Conditions for product specific warranty information.

3 Warning Labels


DANGER

DANGER:

The hazard or unsafe practice will result in severe injury or death.


WARNING

WARNING:

The hazard or unsafe practice could result in severe injury or death.


CAUTION

CAUTION:

The hazard or unsafe practice could result in minor injury.


NOTICE

NOTICE:

Possibly dangerous situation, goods might be damaged.


IMPORTANT

IMPORTANT:

Helpful information.

4 Safety Notices


DANGER

DANGER:

This equipment is normally used or connected to circuits that may employ voltages that are dangerous and may be fatal if accidentally contacted by operating or maintenance personnel. Extreme caution should be exercised when working with this equipment. While practical safety precautions have been incorporated in this equipment, the following rules must be strictly observed:

4.1 Keep Away from Live Circuits


DANGER

DANGER:

Operating and maintenance personnel must at all times observe all safety regulations. Do not perform maintenance on internal components or re-lamp with power ON.

4.2 Resuscitation

Maintenance personnel should familiarize themselves with the technique for resuscitation found in widely published manuals of first aid instructions.


IMPORTANT

IMPORTANT:

See FAA Advisory Circular AC 150/5340-26 for additional information.

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6 Part Number Explanation – Taxiway Centerline Light, L-852A, B, C, D, J&K

Ordering Information

8 5 2 ☐ – A P 1 – ☐ ☐ – F 1 – 8 ☐ ☐ – ☐ ☐ – ☐ ☐ – ☐

Fixture Type:
A = Narrow CAT II
B = Wide CAT II
C = Narrow CAT III
D = Wide CAT III
J = Curved CAT II
K = Curved CAT III

Series Version:
AP1 = ProAPF1

Color Side A: (J & K Left Toe Bi-Directional)*
Y = Yellow
G = Green

Color Side B: (J & K Right Toe Bi-Directional)*
Y = Yellow
G = Green
N = No Light Source

Specification:
F1 = FAA

Fixture Dimension:
8F = 8” Fixture with 12”FAA Support Ring
8N = 8” Fixture , No Support Ring

Beam Orientation:
S = Straight (A/B/C/D Only)
L = Left Toe-In (Unidirectional J/K Only)
R = Right Toe-In (Unidirectional J/K Only)
C = Curved (Bi-Directional J/K Only)

Plug Options:
P1 = One plug
P2 = Two plugs
B1 = One plug, independent directional power source**

Heater Options:
0 = No options
1 = Arctic kit

Gasket Options:
0 = No options
1 = Optical Assembly to Support Ring Gasket

Contact factory for other gasket sizing

* Green/Yellow and Yellow/Green color combinations are only recognized by FAA for 852A and 852C fixtures.

**A larger 65W transformer is reccommended if this option is chosen.

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7 General Description

The Crouse-Hinds Taxiway Centerline Light (TCL) is a Style 3, ETL certified FAA L-852A, B, C, D, J & K light unit per FAA AC 150/5345-46. It is designed for installation at the centerline of taxiways or any other location where visual guidance of moving aircraft or ground vehicles is desirable. The light unit is designed to fit on a FAA L-868, steel, size B light base per FAA AC 150/5345-42(latest version), and have a total height above grade/ground level of ≤ .250 inch. The light unit is uni-directional or bi-directional, projecting two beams of light 180° apart for straight light units and 150° apart for toed light units. It is weatherproof and will endure roll over loads without damage. The light unit consists of a ductile iron support ring and a removable aluminum optical assembly. The ductile iron ring is mounted to a light base with six bolts and six 2-piece lock washers. The aluminum assembly is secured to the ductile iron ring using two high-strength bolts, two 2-piece lock washers and two high-strength shear pins. The aluminum optical assembly has a forged aluminum optical housing and a die cast inner cover that is attached using 4 screws. An o-ring is used to provide a watertight seal between the inner cover and the optical housing. Either one or two LED assemblies are fastened to the optical housing. One plug (P1) TCLs have 1 power supply fastened to the inner cover. Two plug (P2) and one plug with independent power supplies (B1) TCLs have two power supplies fastened to the inner cover. Electrical connections are made at one or two feed-through assemblies in the inner cover. The feed-throughs have ITS verified L-823 plugs for connecting to FAA L-830/ L-831 isolation transformers. Lenses are held into the aluminum housing with a bracket, gasket, molded elastomeric boot and two screws. The light beam color can be changed by switching LED module assemblies and power supplies. All fasteners are type 18-8 stainless steel, except the bolts and 2-piece washers securing the optical housing to the support ring. These bolts are 410 stainless steel heat treated with a black oxide coating and the 2-piece washers are a hardened type of austenite stainless steel. The complete light unit with support ring is 11.94 inches in diameter, 3.62 inches deep and weighs 21 lbs.


IMPORTANT

IMPORTANT

Do not open any light unit unless the warranty period has expired. Opening a light unit will void the warranty


CAUTION

CAUTION:

Never handle the light assembly by the leads as this can break the waterproof seal

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8 Installation

The Style 3 TCL light units are shipped complete, including the LED module(s), and are ready for installation as received. Installation of a light unit is to be done with primary POWER OFF and SECURED. At each light location, install a steel, size B, 12 inch deep minimum, L-868 Light Base per FAA AC 150/5340-4 (latest revision). For TCL light units, install the light base with two opposite bolt holes perpendicular to the taxiway centerline. Place the properly sized isolation transformer(s) in the light base and make necessary primary power connections using L-823 connectors. The TCL light unit minimum isolation transformer requirements are found in Section 12, on tables 2 and 3. All isolations transformers are 6.6 ampere secondary models.

IMPORTANT

IMPORTANT:

Proper transformer wattage is dependent on the configuration options of your light unit(s) and is necessary for meeting FAA specifications. See Section 12, tables 2 and 3 for minimum transformer requirements.

Verify that the mounting flange on the light base is clean and the o-ring (optional on deep cans) is coated with Dow Corning FS 1292 grease and is in place on the light base. Connect the plug(s) from the light unit to the secondary of the previously installed isolation transformer(s). Installation tool, Crouse-Hinds P/N 19999, will ease in the installation and removal of the light unit (See Figure 3). The threaded eyebolts on the lifting tool screw into threaded holes in the light unit. Lower the light unit straight down onto the base. The light unit is subject to optical misalignment or mechanical damage if not seated properly. Verify the light beam(s)/color(s) are properly orientated for the individual location. Secure the light unit to the base per Section 8.2. After installation, the mounting bolts should be periodically checked for proper torque to ensure a secure installation. See **Section 9.10.4.**

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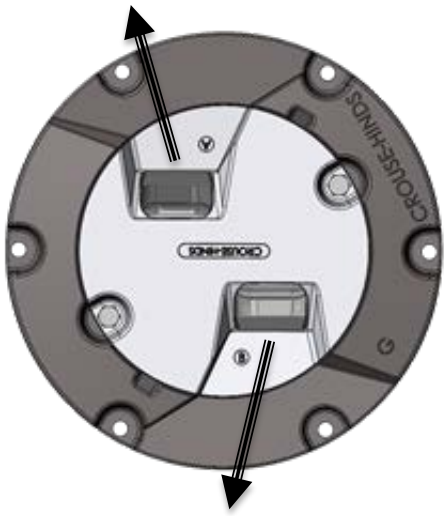
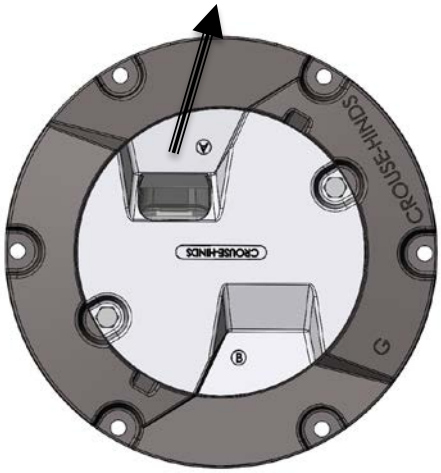
8.1 852 J & K Toeing Figures

Toed and curved (bidirectional toed) light units offer a light beam that is angled with respect to the alignment of the light fixture. Refer to the product options in Section 6 to determine if your light unit is straight, toed, or curved. The figures below show the beam directions of straight, toed, and curved light units. Note that, on curved light units, side “A” is always toe-left and side “B” is always toe-right. On unidirectional toed units, side “A” is either toe-left or toe-right, whereas, side “B” is always blank.

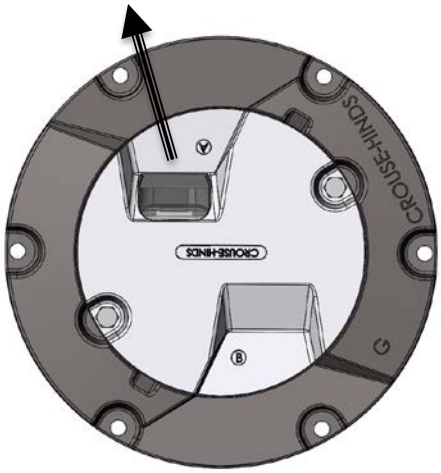
STRAIGHT
(BI-DIRECTIONAL UNIT SHOWN)



CURVED



TOE RIGHT



TOE LEFT

8.2 Installation Bolt Torque

- Use fully threaded, 3/8-16 bolts meeting requirements of FAA EB83A. (P/N 21716 is recommended.)
- Use Heico-Lock or Nord-Lock stainless steel lock-washers per FAA specifications*.
- Mounting base holes must be degreased, cleaned, and dried prior to bolt installation.
- Base-to-fixture mating surfaces must be degreased, cleaned, and dried prior to installation.
- Apply marine grade anti-seize (K=.18) per manufacturer’s instructions to each bolt.
- Install the 3/8-16 bolts with lock-washers per lock-washer manufacturer’s guidelines.
- See Section 8.3 for Heico-Lock installation guidelines (2014)
- Achieve a full final torque of 28 FT-LBS (37.9 N-m) ±10% with a calibrated torque wrench.
- Impact wrenches are *not* recommended as installation tools.
- Check torque and re-torque all bolts within 2 weeks of initial installation.
- Maintain all bolts by checking and re-torqueing per FAA specifications*.
- If any lubricants or thread locking compounds are used (not recommended), torque must be recalculated based on K factor provided by lubricant or compound manufacturer.
- New bolts and lock-washers shall be used each time a light unit is removed from its base.

*Refer to the following specifications for FAA installation and maintenance recommendations:

- AC150/5340-26 “Maintenance of Airport Visual Aids”
- AC150/5345-46 “Specification for Runway and Taxiway Light Fixtures”
- FAA Engineering Brief No. 83A “*In-pavement Light Fixture Bolts*”

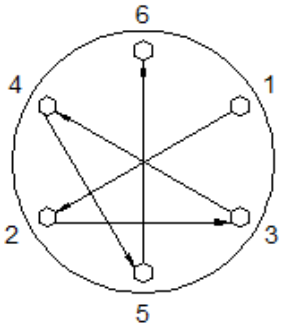
WARNING

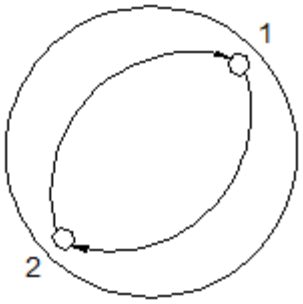
WARNING:

8” Pro APF TCL optical assemblies are designed to withstand a maximum torque of 28 ft-lb (336 in-lb) per bolt, assuming K=.18 lubricant and appropriate superior-grade 3/8” hardware, however other components within the light fixture installation (i.e. base-can, extension rings, spacer rings, etc.) may not be capable of supporting such a load. Crouse-Hinds recommends following the installation bolt torque values and methodology outlined in Section 8.2.

8.3 Heico-Lock Installations Guidelines (2014)

Step 1: Hand tighten to ensure that 2-3 threads extend beyond the nut on through-bolt applications.
Step 2: Tighten each bolt to one-third of the final required torque following the pattern as shown below.
Step 3: Increase the torque to two-thirds following the pattern shown below.
Step 4: Increase the torque to full torque following the pattern shown below.
Step 5: Perform one final pass on each bolt working clockwise from bolt 1, at the full final torque.





9 Maintenance

The preferred method of maintaining a light unit is to periodically and systematically replace the unit and return it to the maintenance shop for renovation. As an alternative, the light unit can be serviced in the field. However, it is recommended that field servicing be limited to bolt torque checks per Section 9.10.4 and cleaning the lens only as described in Section 9.1. For extensive field service, refer to Sections 9 and 10 for instructions and spare parts kits.

IMPORTANT

IMPORTANT:

Do not open any light unit unless the warranty period has expired. Opening a light unit will void the warranty

9.1 Cleaning Lenses

With a compressed air blast or suitable brushes, remove all accumulated debris from the light channel. Clean the outer surface of the prism with a detergent solution. If the lens is coated with a substance impervious to the detergent, a suitable solvent should be sparingly applied with a wad of cotton or a patch of cloth on the end of a wood splint. After the solvent has acted the remaining solvent and softened coating should be removed with a clean piece of cotton or cloth. Care should be taken to avoid excessive contact between the solvent and the lens seal. Remove all remaining solvent from lens and seal. A gentle air blast may be used.

9.2 Light Module Replacement

CAUTION:

Power supply is hot when light unit is energized and remains hot for a short time after unit is turned off

Remove and secure power to the light unit. Separate the optical assembly from the ductile iron support ring by removing the two bolts. There are two pry slots in the optical housing to help separate the optical assembly from the support ring. Disconnect the light unit lead(s) from the isolation transformer(s). Turn the optical assembly upside down and remove the fours crews holding the inner cover to the light housing. Disconnect the power supply lead(s) from the LED modules. Remove the two cap screws holding the LED module to the optical housing. Clean the inside surfaces of the lens(es) with denatured alcohol. Install the new module using thermal grease between LED module bracket and optical housing. Tighten the screws to 22-24 in-lb. Connect the power supply leads to the new LED modules. Inspect the feed-through terminals for signs of corrosion. Replace feed-through assemblies per paragraph 9.5. Inspect/replace the optical housing’s o-ring per paragraph 9.3. Assemble the inner cover onto the light housing. Tighten the mounting screws to 25-30 in-lb. Perform a pressure test as described in paragraph 9.6. Connect the light unit lead(s) from the isolation transformer(s). Clean the mounting flange area of the support ring. Install the light unit into the support ring per Section 8.2.

9.3 O-Ring Replacement

Every time the light unit is opened, the o-ring must be closely examined and replaced, if necessary. Refer to Section 10 to determine the appropriate replacement kit for your light unit. Any o-ring that is stretched, torn, has permanent set, or some other defect which would prevent it from forming a watertight seal must be replaced with a new o-ring.

NOTICE:

A bad o-ring seal is the most common cause of light unit leaks. It is strongly recommended that a new gasket be installed every time the light unit is opened.

Remove the old o-ring from the groove in the optical housing. Carefully clean the o-ring groove and flange mating surface on the inner cover. Take care not to damage the mating surface or the o-ring. Coat the o-ring with a thin layer of Dow Corning FS 1292 lubricating grease. Position the new o-ring in the center of the groove and press it into place. Place and align the inner cover on the optical housing and torque the inner cover screws to 30 in-lb. Perform a pressure test as described in paragraph 9.6. Connect the light unit lead(s) from the isolation transformer(s). Clean the mounting flange area of the support ring. Install the optical assembly into the support ring per Section 8.2.

NOTICE:

NOTICE *The groove is designed to be wider than the o-ring. This provides room for the displacement of the o-ring when compressed between the housing and mating surface. Properly tightened screws are important in obtaining a complete seal.*

9.4 Lens Replacement

If a lens is broken, leaks, or is badly pitted or scarred, it must be replaced. It is highly recommended that this task be performed in a clean shop environment. Lens replacement kits contain all necessary parts to change a lens. Arctic kit replacement kits include replacement lenses for units with arctic kits. Refer to Section 10 to determine the appropriate replacement kit for your light unit. **Remove and secure power to the light unit.** Separate the optical assembly from the support ring by removing the two bolts. There are two pry slots in the optical housing to help separate the optical assembly from the support ring. Disconnect the light unit lead(s) from the isolation transformer(s). Turn the optical assembly upside down and remove the four screws holding the inner cover to the light housing. Disconnect the power supply lead(s) from the LED modules. Remove the two screws holding the LED module to the optical housing. If you are replacing an arctic kit, remove the #6 tie-down screw which fastens the end of the arctic kit’s flexible circuit heater to the optical housing. Remove the two lens retaining bracket screws from the light housing. Remove the lens-retaining bracket and discard the lens-retaining gasket. Firmly push the lens/boot assembly from the outside of the light housing; discard the old lens and boot. If you are replacing an arctic kit, discard the arctic kit assembly as an electronic assembly. Thoroughly clean the lens opening with denatured alcohol and allow it to dry. Inspect the lens opening for scratches or pits; a damaged lens opening surface will not seal properly. Place a new lens boot over the replacement lens Apply a thin coat of Dow Corning FS 1292 grease over the entire outside surface of the lens boot. Align the lens/boot assembly in the lens opening and press it into place. Verify that the lens boot is not pinched in the lens opening. Using a new lens retaining gasket, fasten the lens retaining bracket, and heater tie-down screw on arctic kit versions, to the light housing. Torque the lens retaining bracket mounting screws to 35-40 in-lb and the heater tie-down screw, if applicable, to 8-11 in-lb. Re-install the LED module(s) per paragraph 9.2. Tighten the cap screws to 22-24 in-lb. Connect the power supply leads to the LED assemblies. Inspect/replace the optical housing’s o-ring per paragraph 9.3. Assemble the inner cover onto the light housing. The screw hole patterns in the inner cover and light housing are offset to insure proper alignment. Torque the mounting screws to 25-30 in-lb. Perform a pressure test per paragraph 9.6. Connect the light unit lead(s) to the isolation transformer(s). Clean the mounting flange area of the support ring. Install the optical assembly into the support ring per Section 8.2.

9.5 Feed-Through Replacement

Refer to Section 10 to determine the appropriate replacement kit for your light unit. **Remove and secure power to the light unit.** Separate the optical assembly from the ductile iron support ring by removing the two bolts. There are two pry slots in the optical housing to help separate the optical assembly from the support ring. Disconnect the light unit lead(s) from the isolation transformer(s). Disconnect the power supply leads from the feed-through terminals. Remove the feed-through by unscrewing the retaining collar. Clean the mounting surfaces with denatured alcohol and allow to dry. Apply a thin coat of Dow Corning FS 1292 grease to the mounting flange of a new feed-through. Apply a drop of Loctite 243 to the feed-through adapter threads. Screw the feed-through retaining collar onto the adapter; refer to Figure 5 for proper inner cover/feed-through orientation. Torque the retaining collar to 25-30 in-lb. Reconnect the power supply leads to the feed-through terminals. Inspect/replace the optical housing’s o-ring per paragraph 9.3. Assemble the inner cover onto the light housing. The screw hole patterns in the inner cover and light housing are offset to insure

proper alignment. Torque the mounting screws to 25-30 in-lb. Perform a pressure test per paragraph 9.6. Connect the light unit lead(s) to the isolation transformer(s). Clean the mounting flange area of the support ring. Install the optical assembly into the support ring per Section 8.2.

9.6 Pressure Test

A light unit should be subjected to a 20-psi air pressure test to verify that it is waterproof whenever it has been opened or components have been replaced. A tire valve style pressure fitting is located on the bottom of the inner cover. Pressurize the light unit to 20-psi then place it in a tub of water or use a soap solution to locate escaping air bubbles. Carefully inspect the areas around the lens, inner cover seal, and feed-through adapter for leaks. Relieve the internal air pressure before installing the light unit or attempting to repair a leak.

WARNING:

Do not exceed 20-psi when pressure testing the light unit. Serious injury and/or permanent damage to the light unit may result if a higher air pressure is used. Once the pressure test is complete, be sure to relieve the air pressure

9.7 Power Supply Replacement

CAUTION:

Power supply is hot when light unit is energized and remains hot for a short time after light unit is turned off

Refer to Section 10 to determine the appropriate replacement kit for your light unit. **Remove and secure power to the light unit.** Separate the optical assembly from the ductile iron support ring by removing the two bolts. There are two pry slots in the optical housing to help separate the optical assembly from the support ring. Disconnect the light unit lead(s) from the isolation transformer(s). Turn the optical assembly upside down and remove the four screws holding the inner cover to the light housing. Disconnect the power supply leads from the feed-through terminals and LED module and arctic kit, if applicable.

For P1 light units, remove the three power supply bracket screws. Remove the power supply bracket with attached power supply. Remove the three power supply screws and discard the old power supply as an electronics assembly. Configure the jumper settings for the new power supply per Table 1. Reconnect internal cables per appropriate wiring diagram in Figures 7 - 10.

IMPORTANT:

IMPORTANT

The jumpers must be placed in the correct position(s) for proper operation of the appropriate fixture.
The heater will remain on indefinitely with the temperature sensor disconnected.

Apply thermal grease to the mating surface of the new power supply and secure it to the bracket using the three supplied screws. Torque the screws to 22-24 in-lb. Secure the power supply bracket. Using #10, 2-piece lock washers, torque the bracket mounting screws to 25-30in-lb.

For P2 and B1 light units, the top power supply must be removed before the power supply bracket can be removed. Discard the top power supply as an electronics assembly. After removing and installing the bottom power supply and mounting bracket. Configure the jumper settings for the new power supply per Table 1. Reconnect internal cables per appropriate wiring diagram in Figures 11 - 14.

IMPORTANT

IMPORTANT:

The jumpers must be placed in the correct position(s) for proper operation of the appropriate fixture.
The heater will remain on indefinitely with the temperature sensor disconnected.

Apply thermal grease to mating surface of the power supply and fasten it to the power supply bracket. Torque the top power supply’s screws to 22-24 in-lb. Reconnect the power supply(ies) to the feed-through terminals and LED assembly and arctic kits, if applicable. Inspect/replace the optical housing’s o-ring per paragraph 9.3. Assemble the inner cover onto the optical housing. The screw hole patterns in the inner cover and light housing are offset to insure proper alignment. Torque the mounting screws to 25-30 in-lb. Perform a pressure test per paragraph 9.6. Connect the light unit lead(s) to the isolation transformer(s). Clean the mounting flange area of the support ring. Install the optical assembly into the support ring per Section 8.2.

9.8 External Support Ring Gasket Replacement

Every time an optical assembly with the optional external support ring gasket is removed from the support ring, the gasket on the outside surface of the inner cover should be examined and replaced if necessary. Refer to Section 10 to determine the appropriate replacement kit for your light unit. Any gasket that is stretched, torn, has a permanent set or some other defect, will allow water to enter the light base. Remove the old gasket from the inner cover by carefully scraping with a plastic tool. Take care not to damage the inner cover. Form a thin bead of high temperature silicone adhesive, such as GE RTV 106, on the inner cover sealing surface. Position the new gasket on the inner cover in the same location as the old gasket. Apply a thin coat of Dow Corning FS 1292 grease over the entire outside surface of the gasket before placing the optical assembly on the support ring. Install the optical assembly per Section 8.2.

9.9 Cleanliness and Workmanship

Service life depends upon the entire assembly being waterproof. All surfaces must be clean, dry and free of all foreign matter if the light unit is to operate for extended periods without requiring maintenance.

9.10 Maintenance Program

In order to insure maximum light unit life, the installed units should be subject to a maintenance program in accordance with the following:

A daily operation check should be made of the lighting units. The lights should be energized and visually inspected. If any units are out, the location of the unit should be recorded and the LED modules replaced at a time when the circuit is de-energized. (See Section 9.2)

9.10.1 Regular cleaning is necessary in order to insure that inset lighting units operate at maximum efficiency. The lens and channel in front of the lens should be cleaned periodically with a soft cloth and solvent. The weather and the location of the units will dictate the regularity and type of cleaning.

9.10.2 Snowplow operators should exercise extra care not to strike the light units with snowplow blades. After snowplow removal operations, inspect all light units to locate and replace if necessary, any damaged light units. Passes over the light rows should be made with a power broom only if practical. Whenever snowplows must traverse in-pavement light units, they should be traveling at less than 5 mph or have the blades lifted clear of the units. Recommended snow removal techniques are described in AC 150/5200-23.

9.10.3 The light is designed to exclude both ground and surface water from entering. If the lights are not properly maintained (i.e., bolts tightened and seals in good condition) water may enter the unit. To prevent this from occurring, it is recommended that each unit be inspected for the presence of water at least once a month. More frequent inspection is desirable during and following rainy seasons.

9.10.4 Optical assembly and support ring mounting bolts should be checked for proper torque per Section 8.1 or whenever a unit is serviced regardless of the season. Light units in and around the touchdown zone area are especially prone to vibration and shock damage if the mounting bolts are not properly torqued. The mounting surface of the light base must be clean and free of foreign matter when checking mounting bolts.

9.10.5 If any light unit contains water, the water should be removed and the entire light unit cleaned and dried. Perform a pressure test per paragraph 9.6 to locate the source of the leak. Replace the optical housing o-ring per Section 9.3.

10 Spare/Replacement Parts List

Item	*Part Number*	*Description*
	LED Module Replacements	
1	21687-ABD-G	8” 852A/B/D Green Module
2	21687-ABD-Y	8” 852A/B/D/J/K Yellow Module
3	21687-C-G	8” 852C Green Module
4	21687-C-Y	8” 852C Yellow Module
5	21611-5	8” 852J/K Diffuse Green Module
	Lens Replacements	
6	21642-C	8” 852C-AP1 Lens and Blank Lens Socket Replacement Kit
7	21643	8” 852A/B/D/J/K-AP1 Lens Replacement Kit
8	21644-1	8” 852C-AP1 Arctic Kit Replacement Kit
9	21644-2	8” 852A/B/D/J/K-AP1 Arctic Kit Replacement Kit
	Power Supply Replacements	
10	21645-1	85XX-AP1 Power Supply Replacement Kit
11	21645-2	85XX-AP1 Power Supply Replacement Kit, Arctic Kit Support
	Feed-through Assembly	
12	K3326992	Lead Assembly
	O-Ring, Optical Housing	
13	10035-62	O-Ring, 8” Optical Housing
	Seal, Bottom Cover	
14	21180	Gasket, Support Ring
	Ductile Iron Mounting Ring (Support Ring)	
15	21646-1	8” 85XA/B/C/D-AP1 Support Ring Replacement Kit
16	21646-3	8” 852J/K-AP1 Support Ring Replacement Kit
	2-Piece Lock Washer Kit	
17	21647-2	3/8” 2-Piece Washer Replacement Kit, QTY 2 (For mounting 8” optical housing to support ring. Included with LED module and power supply replacement kits.)
18	21647-8	3/8” 2-Piece Washer Replacement Kit, QTY 8 (For mounting 12” support ring into base canister. Included with support ring replacement kits.)
19	21647-XXXX	3/8” 2-Piece Washer Replacement Kit, Customer Specified QTY
	Installation Bolts	
20	21716-XX	Bolt, Hex Head, 3/8-16, 410 SS with black oxide coating, Customer specified length

BOLT LENGTHS	
21716-07	.88
21716-08	1.00
21716-09	1.13
21716-10	1.25
21716-11	1.38
21716-12	1.50
21716-14	1.75
21716-16	2.00
21716-18	2.25
21716-20	2.50
21716-22	2.75
21716-24	3.00
21716-26	3.25
21716-28	3.50

Item 20, 21716-XX, length options. Length in inches.

11 Troubleshooting

If a light unit is under warranty, please contact Crouse-Hinds Airport Lighting for assistance. DO NOT open a unit. If the unit is opened, the warranty is VOID. If the warranty period has expired and troubleshooting is required, follow the steps below to find the root cause. Replacement parts will be required for testing of the different components of the light unit.

WARNING

WARNING:

Do not remove the fixture from the base can while the fixture is powered. Dangerous voltage may be present on the primary and secondary sides of the isolation transformer.

Contact Crouse-Hinds Airport Lighting for assistance prior to operating a failed fixture. There may be dangerous voltage present on the input AC pins of the power supply.

11.1 Visual Inspection

Follow the steps in Section 9.7 to open the fixture. Verify all the wires are not pinched or damaged and that the wire insulation is intact. Verify the input AC is connected to the feed-through (see Figure 5). Verify the power supply connections and appropriate jumper setting per Figure 1 and Table 1.

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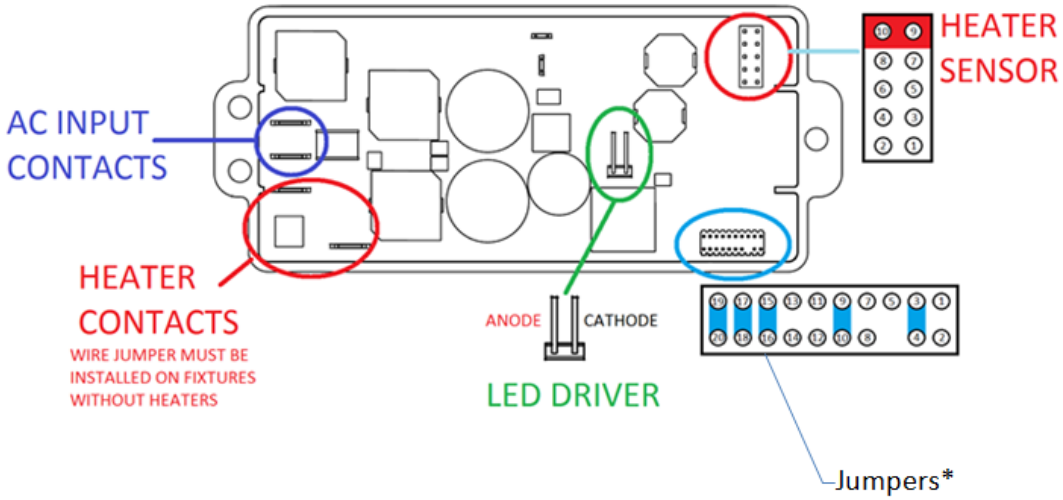

*See table 1, Jumpers shown in figure 1 are for example only.

Figure 1: Power Supply Connections

IMPORTANT

IMPORTANT:

The jumpers must be placed in the correct position(s) for proper operation of the appropriate fixture.

The heater will remain on indefinitely with the temperature sensor disconnected.

Replace any damaged or burned cables. Replace damaged LED module(s) per Section 9.2. Replace damaged power supply(ies) per Section 9.7. Refer to Section 10 to determine the appropriate replacement kit for your light unit.

11.2 Electrical Inspection

WARNING

WARNING:

Contact Crouse-Hinds Airport Lighting for assistance prior to operating a failed fixture. There may be dangerous voltage present on the input AC pins of the power supply.

It is recommended that a ferro style constant current regulator (2.8 to 6.6A_{RMS}) with a 10/15W isolation transformer or a voltage limited constant DC current source be used to test failed fixtures to limit the input voltage.

A buzzing or humming noise coming from the isolation transformer may indicate a failed power supply or LED module. It is also an indicator of dangerous voltage on the primary and secondary sides of the transformer.

NOTICE

NOTICE:

Applying a constant voltage greater than 50V (AC or DC) to the input will cause damage to the power supply.

Applying input current to the power supply without the heater or jumper installed will cause damage to the power supply.

Follow the steps in Section 9.7 to open the fixture and remove the top power supply as required. The power supply continuously monitors the status of the LED module. There is a green status LED (see Figure 2) that may be visible through the potting. The LED will not be visible in P2 or B1 configured fixtures without removing the top power supply. A blinking LED indicates the power supply has detected a fault condition.

Fault conditions include:

- Disconnected or ‘Open’ LED module
  - Replace cable if damaged or ‘open’.
- Incorrect jumper setting or missing jumpers
  - See Table 1 for proper jumper setting.
- More than 25% of the driven LED ‘Shorted’
  - Replace LED module per Section 9.2.

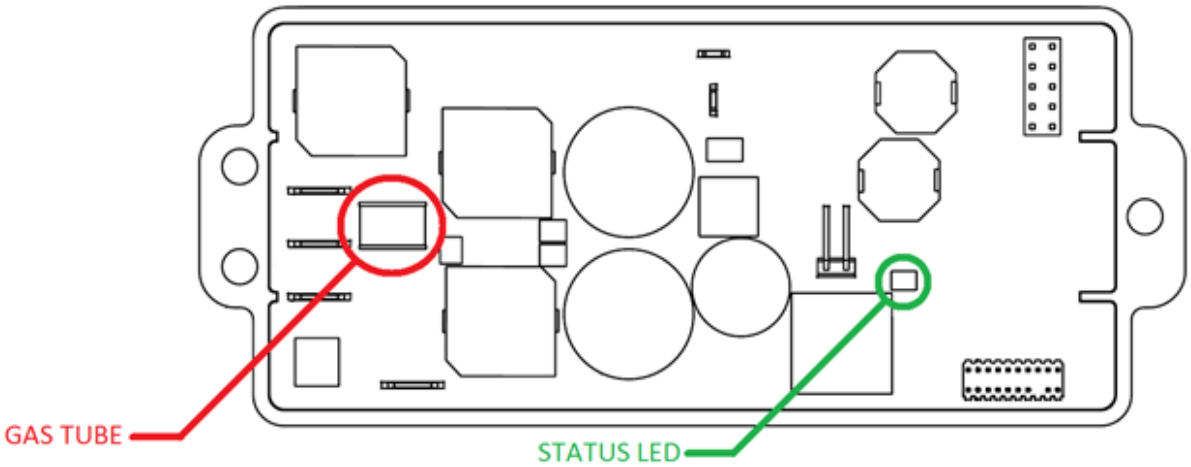

Figure 3: Power Supply Status LED Location

If the status LED is not visible or not lit, replace the power supply per Section 9.7 or contact Crouse-Hinds Airport Lighting Products for assistance. Refer to Section 10 to determine the appropriate replacement kit for your light unit.

12 Tables and Figures

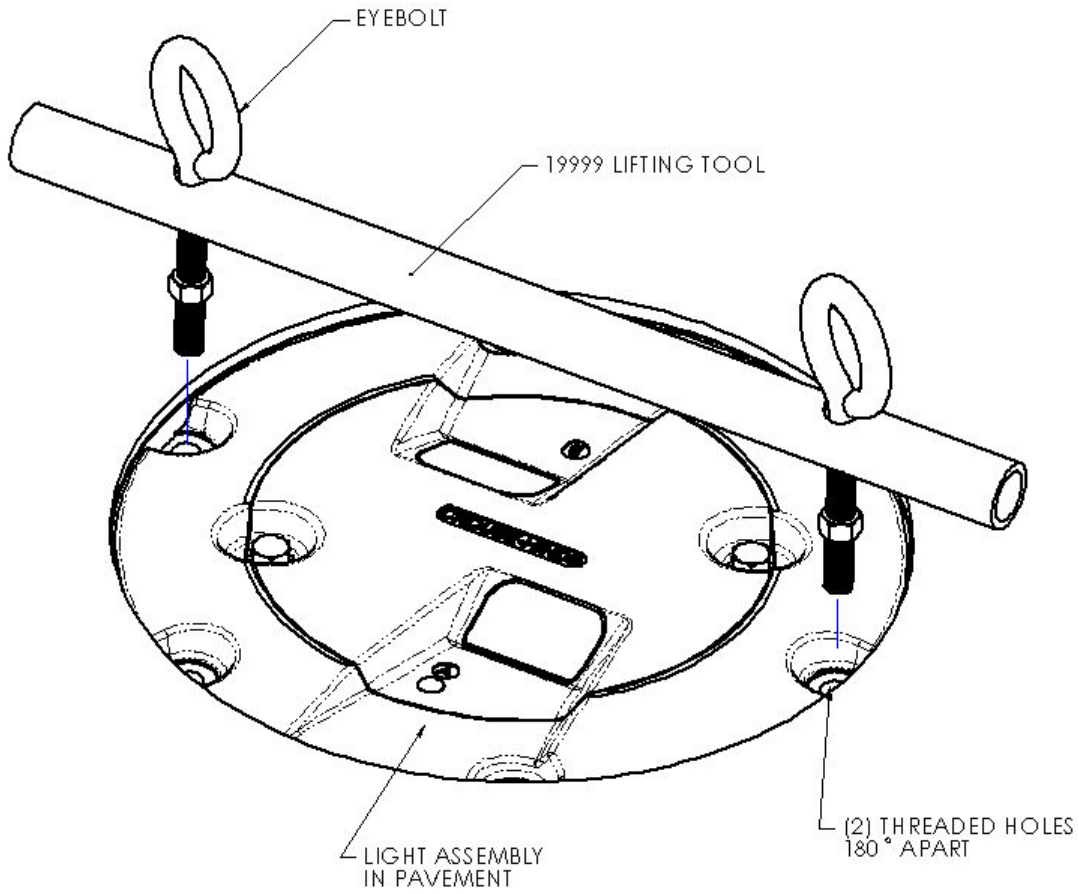

Figure 3: 19999 Installation (Lifting) Tool

TCL Light Unit Shown

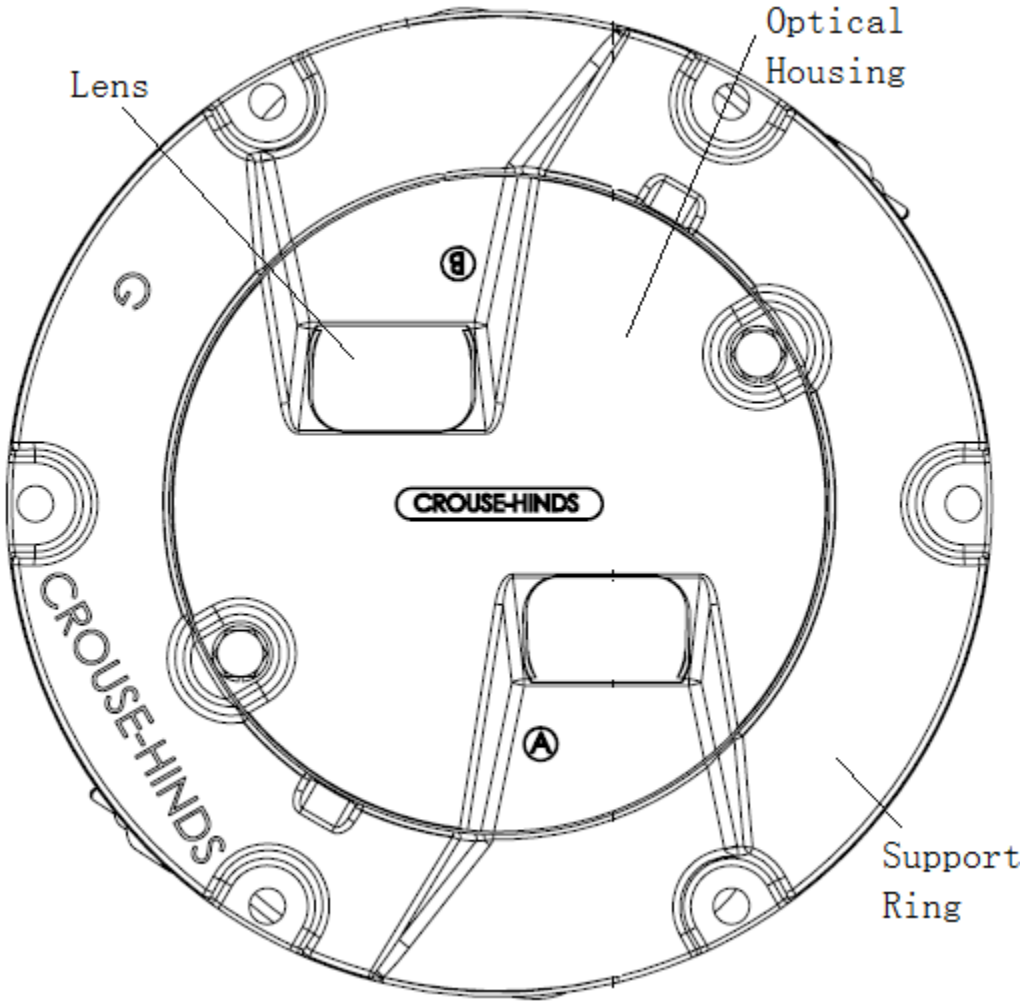

Figure 4: Top View of Light Unit

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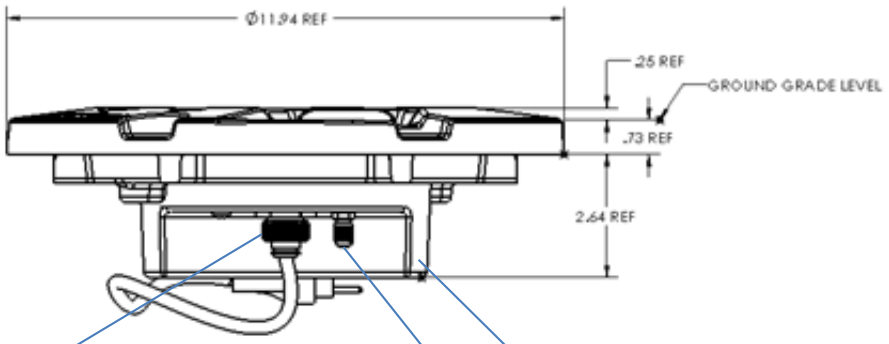

Feed-through Connector

Figure 5: Side View of Light Unit

Inner Cover

Pressure Port

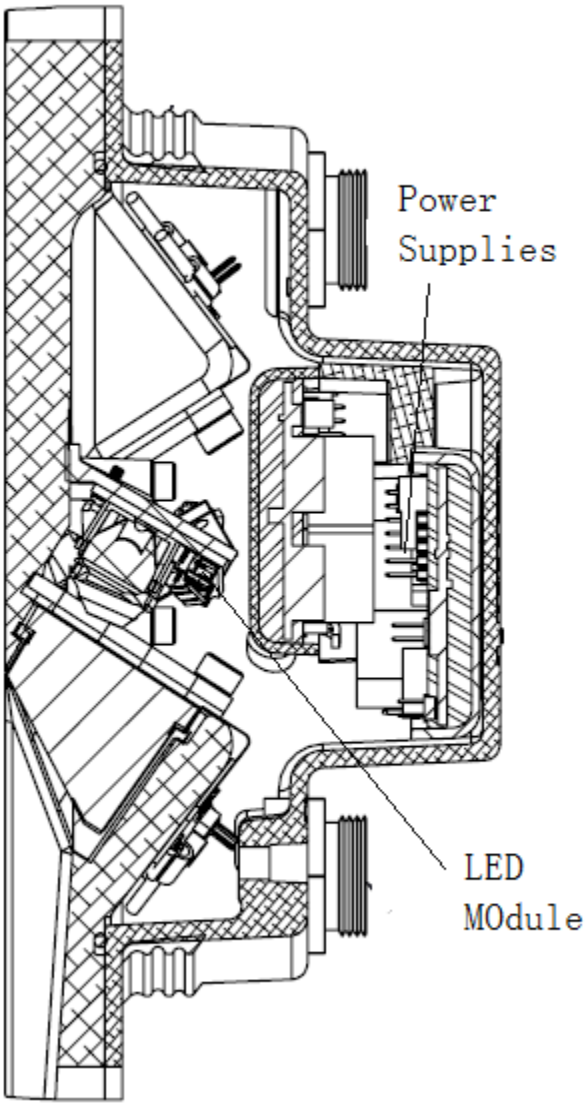

Figure 6: Sectioned View of Light Unit

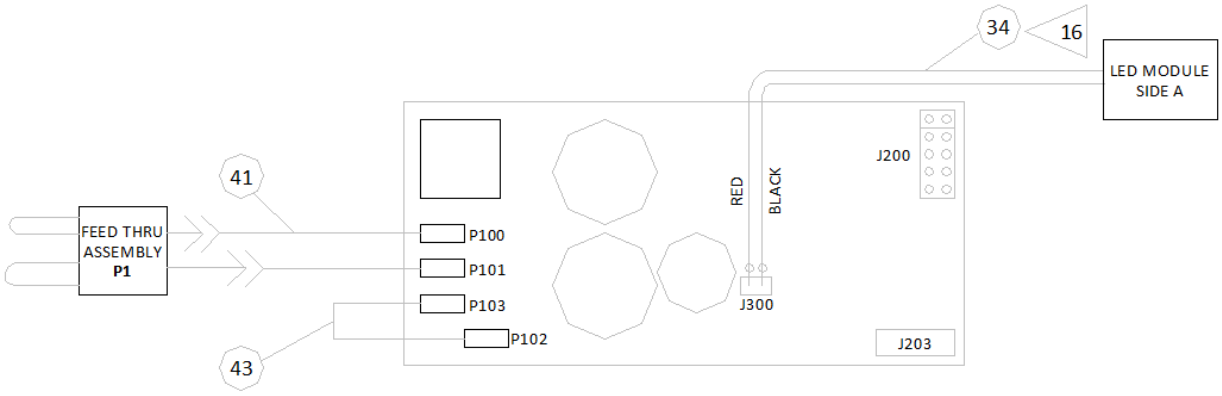

Figure 7: UNIDIRECTIONAL UNIT, P1 CONFIG, WITHOUT HEATER

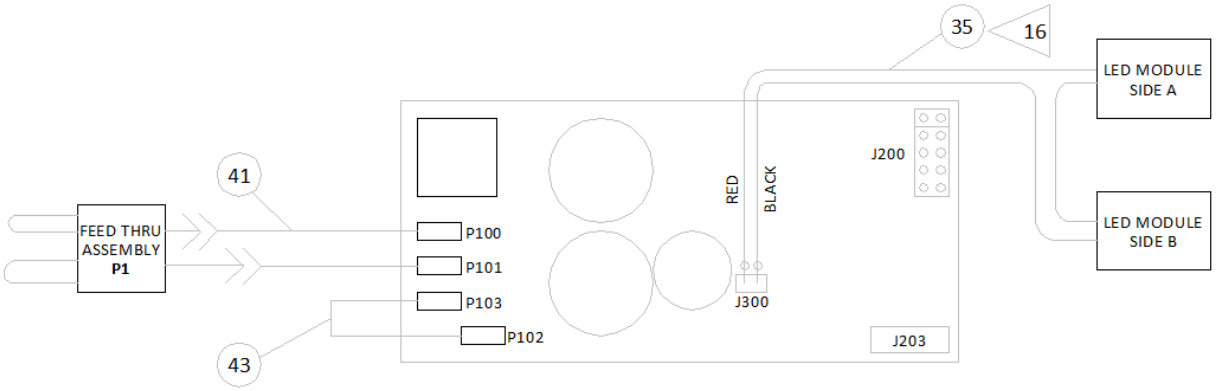

Figure 8: BIDIRECTIONAL UNIT, P1 CONFIG, WITHOUT HEATERS

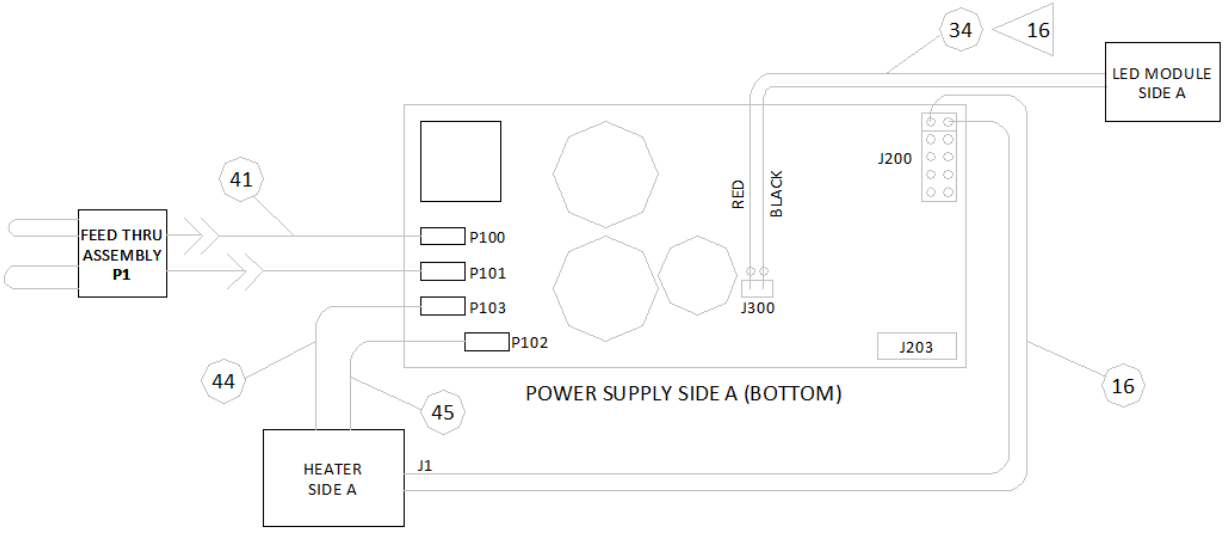

Figure 9: UNIDIRECTIONAL UNIT, P1 CONFIG, WITH HEATER

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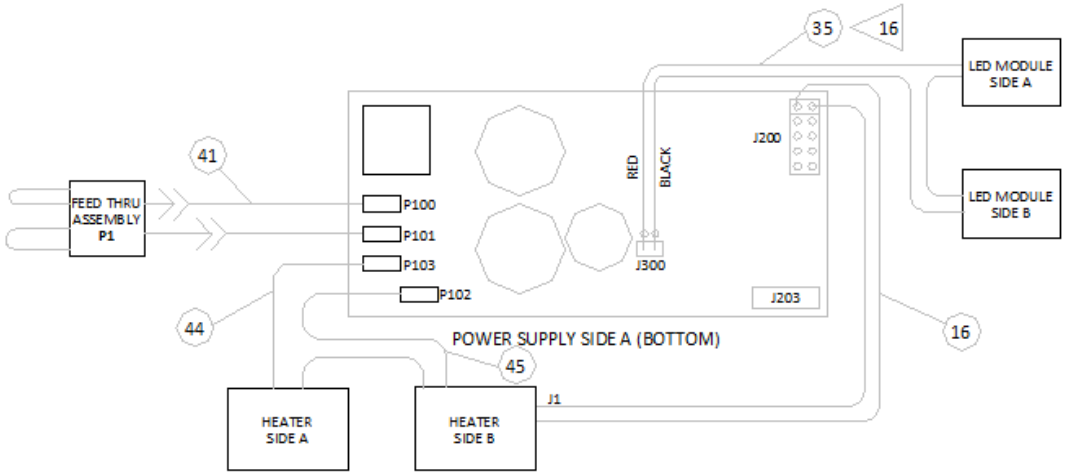

Figure 10: BIDIRECTIONAL UNIT, P1 CONFIG, WITH HEATERS

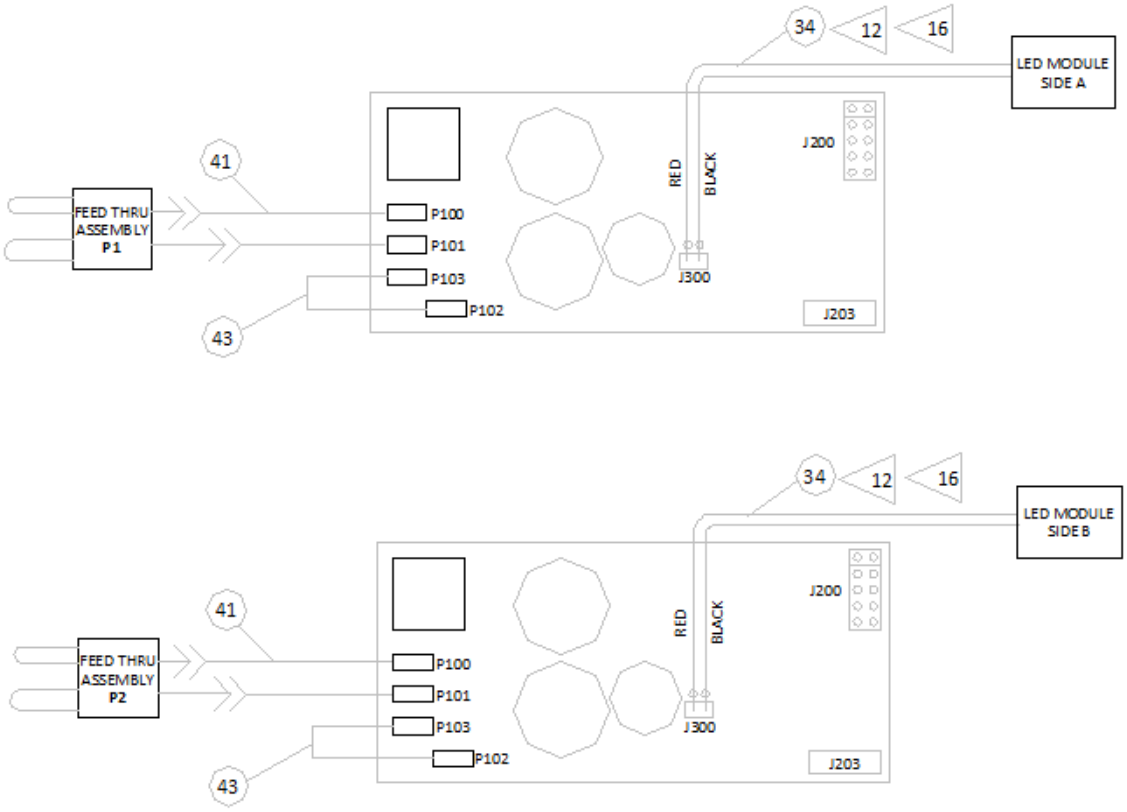

Figure 11: BIDIRECTIONAL UNIT, P2 CONFIG, WITHOUT HEATERS

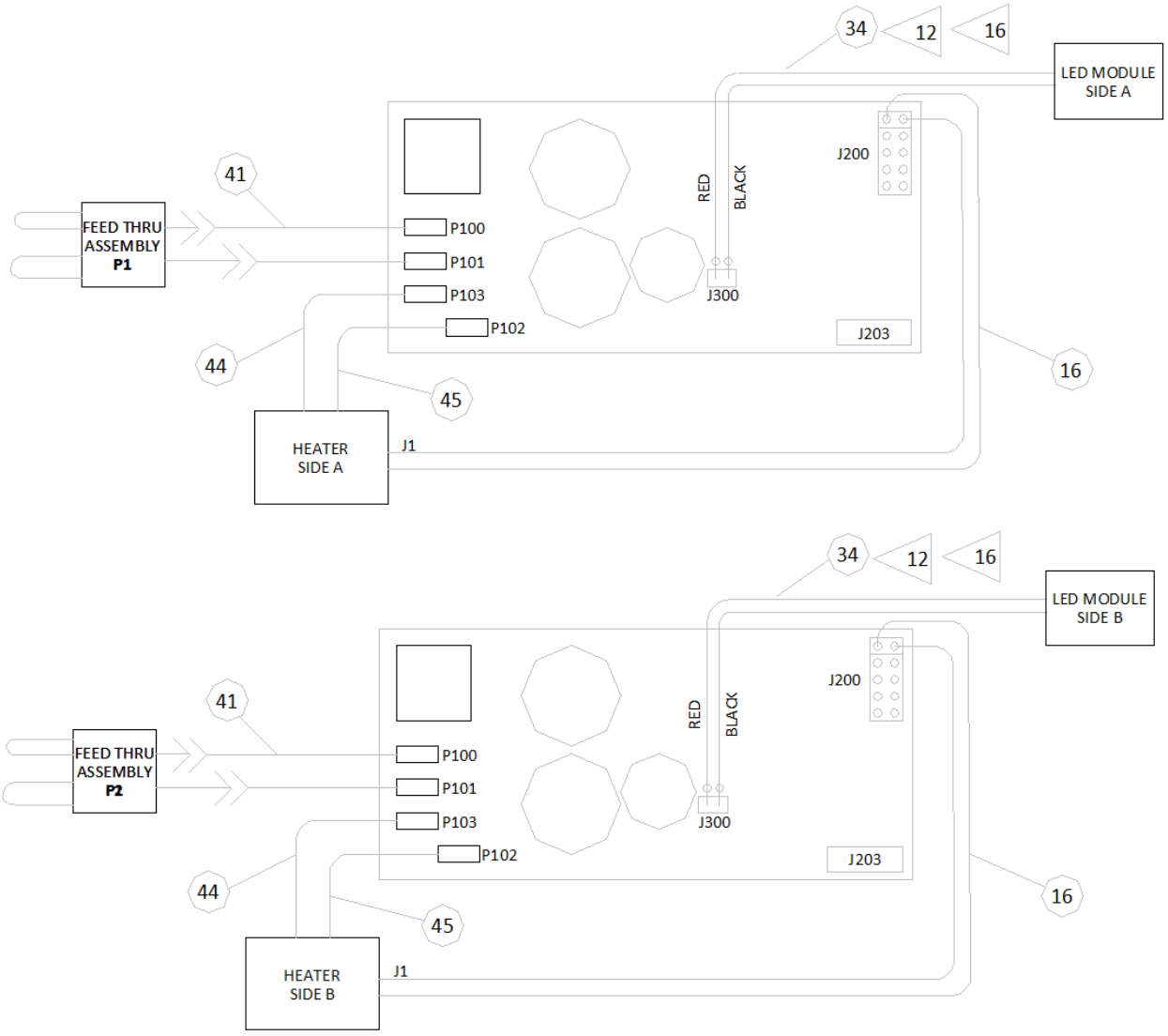

Figure 12: BIDIRECTIONAL UNIT, P2 CONFIG, WITH HEATERS

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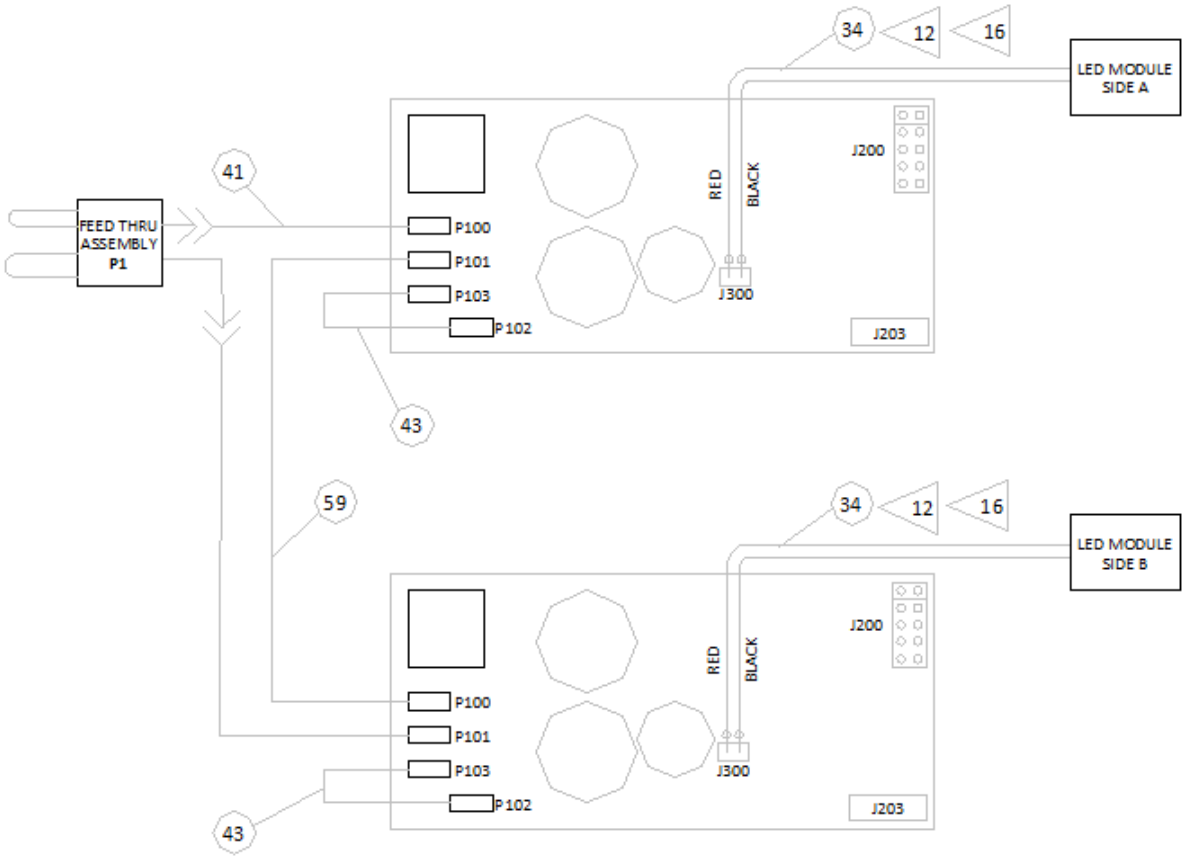

Figure 13: BIDIRECTIONAL UNIT, B1 CONFIG, WITHOUT HEATERS

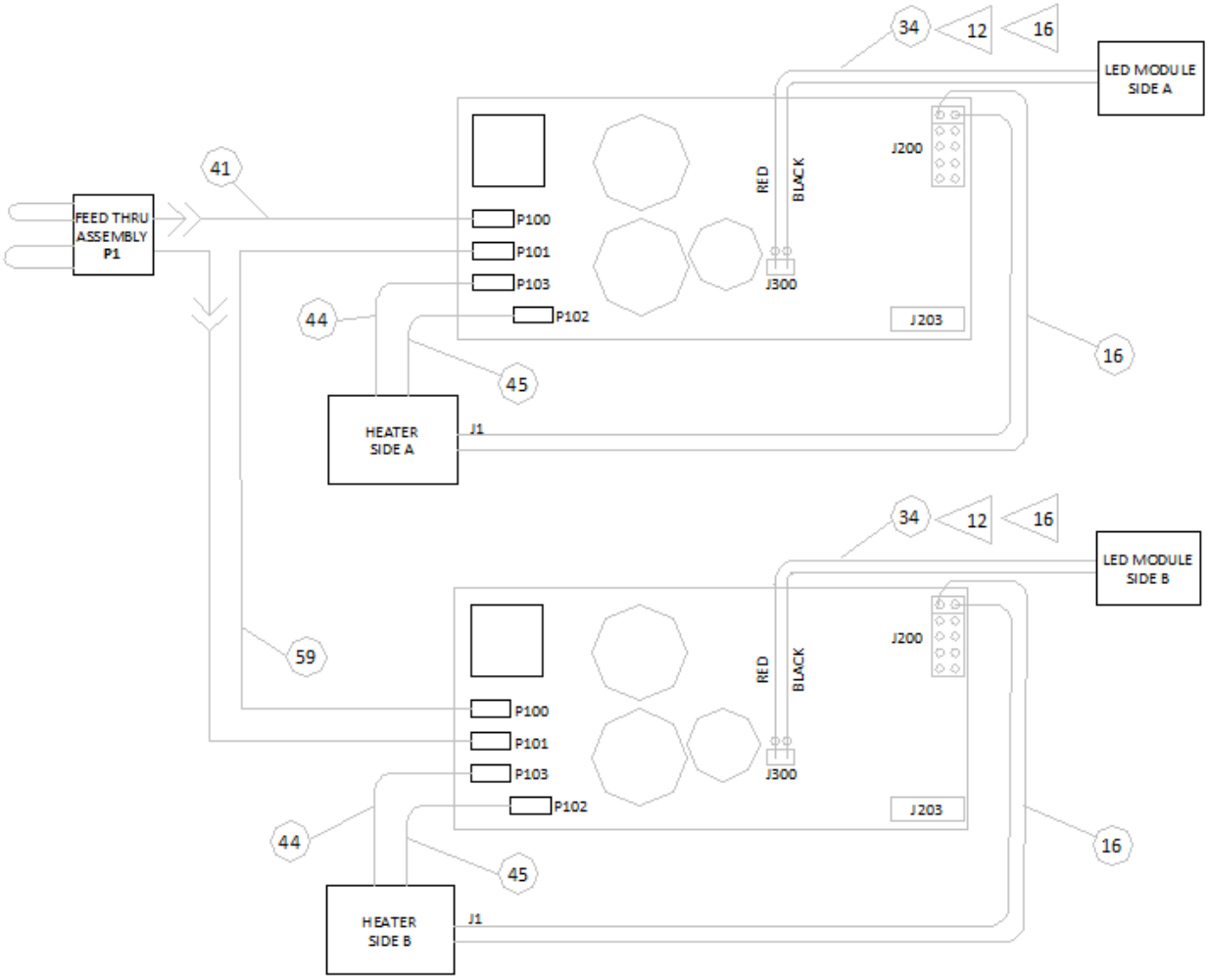

Figure 14: BIDIRECTIONAL UNIT, B1 CONFIG, WITH HEATERS

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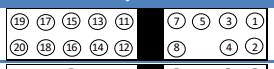
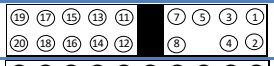
	Light unit Part Number	J203 Jumper Setting
L852A	852A-AP1-XX-XX-XXX-P1-X-X	
L852B	852B-AP1-XX-XX-8XX-P1-X-X	
L852C	852C-AP1-XX-XX-8XX-P1-X-X	
L852D	852D-AP1-XX-XX-8XX-P1-X-X	
L852J	852J-AP1-XX-XX-XXX-P1-X-X	
L852K	852K-AP1-XX-XX-XXX-P1-X-X	

Table 1: Light Unit / J203 Jumper Table

		P1-Uni		*P1-Bi*		*P2/B1*	*P2*	*B1*
Fixture	***Diameter***	***VA***	***XFMR***	***VA***	***XFMR***	***VA***	***XFMRS***	***XFMR***
L852A	8"/12"	6.5	10/15	6.9	10/15	12.9	10/15	65
L852B	8"	6.5	10/15	6.9	10/15	12.9	10/15	65
L852B	12"	6.9	10/15	7.3	10/15	13.3	10/15	65
L852C	8"	6.9	10/15	7.8	10/15	13.8	10/15	65
L852C	12"	7.1	10/15	8.3	10/15	14.3	10/15	65
L852D	8"	9.4	10/15	12.8	10/15	18.8	10/15	65
L852D	12"	8.6	10/15	11.3	10/15	17.3	10/15	65
L852J	8"/12"	6.5	10/15	6.9	10/15	12.9	10/15	65
L852K	8"/12"	8.6	10/15	11.3	10/15	17.3	10/15	65

Table 2: Minimum Isolation Transformer (XFMR) Requirements in Watts

(See Table 3 for arctic kit units)

		Arctic Kit Units						
		P1-Uni		P1-Bi		P2/B1	P2	B1
Fixture	Diameter	VA	XMFR	VA	XMFR	VA	XMFRS	XMFR
L852A	8"/12"	22.5	20/25	38.9	10/15	44.9	65	100
L852B	8"	22.5	20/25	38.9	10/15	44.9	65	100
L852B	12"	22.9	20/25	39.3	10/15	45.3	65	100
L852C	8"	22.9	20/25	39.8	10/15	45.8	65	100
L852C	12"	23.1	20/25	40.3	10/15	46.3	65	100
L852D	8"	25.4	30/45	44.8	10/15	50.8	65	100
L852D	12"	24.6	20/25	43.3	10/15	49.3	65	100
L852J	8"/12"	22.5	20/25	38.9	10/15	44.9	65	100
L852K	8"/12"	24.6	20/25	43.3	10/15	49.3	65	100

Table 3: Minimum Isolation Transformer (XFMR) Requirements in Watts