

Service Bulletin  
ALN140  
Retain for future use.  
Rev. C, 7/23/13

## **Wind Cone Internal LED Upgrade Kit 94A0500 Size 1 and 2 to bolted and welded cage**



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## 1.0 Kit 94A0531

### Wind Cone Internal LED Upgrade Kit 94A0500

#### 1.1 Safety

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

##### 1.1.1 To use this equipment safely:



##### WARNING

Read installation instructions in their entirety before starting installation.

- Refer to the FAA Advisory Circular AC 150/5340-26, Maintenance of Airport Visual Aids Facilities, for instructions on safety precautions.
- Observe all safety regulations. To avoid injuries, always disconnect power before making any wiring connections or touching any parts. Refer to FAA Advisory Circular AC 150/5340-26.
- 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.

##### 1.1.1.1 Additional Reference Materials:

- NFPA 70B, Electrical Equipment Maintenance.
- NFPA 70E, Electrical Safety Requirements for Employee Workplaces.
- ANSI/NFPA 79, Electrical Standards for Metalworking Machine Tools.
- OSHA 29 CFR, Part 1910, Occupational Health and Safety Standards.
- National and local electrical codes and standards.

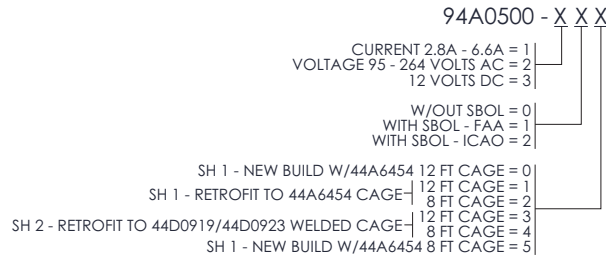
##### 1.1.2 Qualified Personnel

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

Always use required personal protective equipment (PPE) and follow safe electrical work practices.

## 1.2 Introduction

Figure 1: Kit 94A500 Ordering Code



For the retrofit kit, updating a bolted-cage windcone requires the following additional parts:

This service bulletin provides instructions to install a new ADB LED kit in L-807 Internally Lighted Wind Cone Assembly that has been supplied by ADB since 2005.

Refer to Table 1 and Table 2 for the tools and equipment required to install a ADB LED Internally Lighted Kit.

**Table 1: Required Equipment Supplied**

| Description      | Part Number | Size |
|------------------|-------------|------|
| Service Bulletin | ALN140      | -    |
| Boltage Cage Kit | 94A0500-XX1 | 12   |
|                  | 94A0500-XX2 | 8    |
| Welded Cage Kit  | 94A0500-XX3 | 12   |
|                  | 94A0500-XX4 | 8    |

**Notes:**

- Bolted Cage kits include replacement upper shaft and upper bearing.
- Welded Cage kits include replacement upper shaft.
- 8-foot kits come with one LED Light Engine and the 12-foot kits come with three LED Light Engines.
- The ADB LED Internally Light Kit includes a Rotating Power Assembly (RPA).
- A L-810 SBOL Obstruction Light Assembly is optional.

**Table 2: Required Equipment Not Supplied**

| Description   | Qty |
|---|-----|
| Wrenches for 3/8 inch, 1/2 inch, and 5/8 inch hex screws and nuts | 3   |
| Allen hex keys for 5/64 inch, 3/16 inch and 1/4 inch              | 3   |
| Medium size blade screwdriver                                     | 1   |
| 36 inch bubble level  | 1   |
| Miniture size blade screwdriver                                   | 1   |
| Thread Locking Pipe Sealant (Locktite 571)                        | A/R |
| L-807 Instruction Manual 96A0345                                  | 1   |

### 1.2.1 Special Tools and Equipment Required

### 1.3 General Instructions

De-energize the field circuit connected to the wind cone before installing the new internally lighted kit. Read and understand the service bulletin before working on the wind cone. The assemblies can be powered by either a series circuit or a voltage power. See Table 1.

Check the new internal light kit for any shipping damage. Notify the trucking firm and ADB Airfield Solutions Sales Department immediately if any damaged is found.

#### 1.3.1 Lowering the Wind Cone Assembly to the Ground

After disconnecting the field circuit:

Follow procedure and see Figure 2.

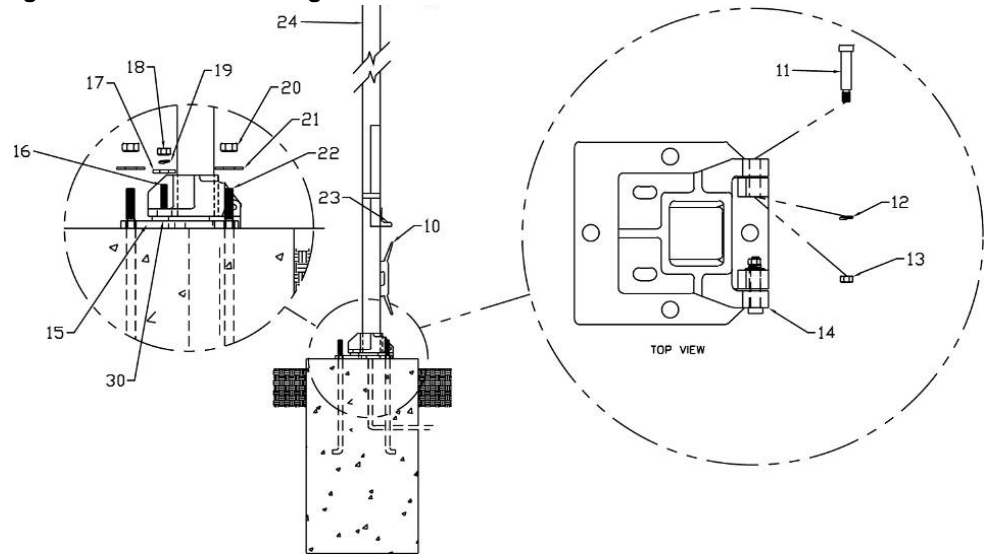
- **Before lowering the pole assembly**

- Check the rope for breaks, cuts, fraying, or other deterioration that would allow the rope to break during the lowering operation. Replace the rope, if necessary.
- Check that the support leg (23) swings away from the pole freely by moving the support leg by hand. If the support leg is tight, oil joint or adjust the nut torque until the support leg swings freely.

**NOTE:** Additional support can be provided by placing a sawhorse in the lowering path of the pole.

- Remove two hex nuts (18), split washers (19), and flatwasher (17) from the base plate screw (16). See Figure 2.

**Figure 2: L-807 Mounting**



- |                                  |                          |                    |                             |
|----------------------------------|--------------------------|--------------------|-----------------------------|
| 10. Rope Cleat                   | 17. 1/2 Thick Flatwasher | 20. 5/8-11 Hex Nut | 23. Support Arm Assembly    |
| 15. Pole Support Base Plate      | 18. 1/2 Hex Nut          | 21. 5/8 Lockwasher | 30. 1/2 Flatwasher - Thin   |
| 16. 1/2-13 x 2 Hex Hd Cap Screws | 19. 1/2 Split Lockwasher | 22. Anchor Bolt    | 8. Upper Shaft Attach Point |

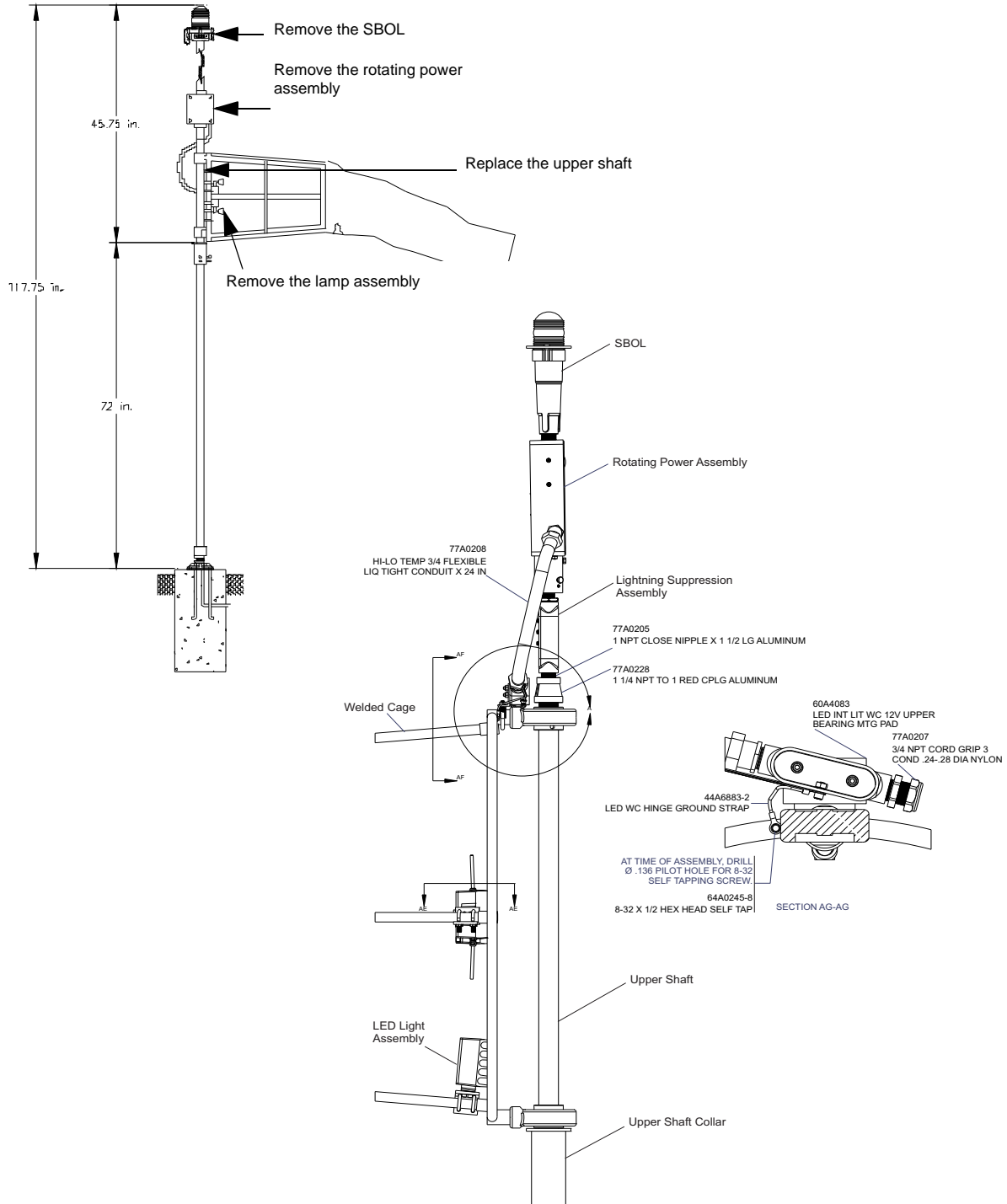
- **During lowering of the pole assembly,**
  - Use at least two people to lower the pole assembly: one person to hold the rope and the other person to hand-walk the pole down.
  - Insure that the wind cone and the wind cone cage assembly does not hit the ground.

**1.3.2 Removing the Existing Internally Light Assembly**

**Welded Cage**

Remove the SBOL, the Rotating Power Assembly, the Internal Lamp Assembly and the Upper Shaft.

**Figure 3: Welded Cage Windcone**



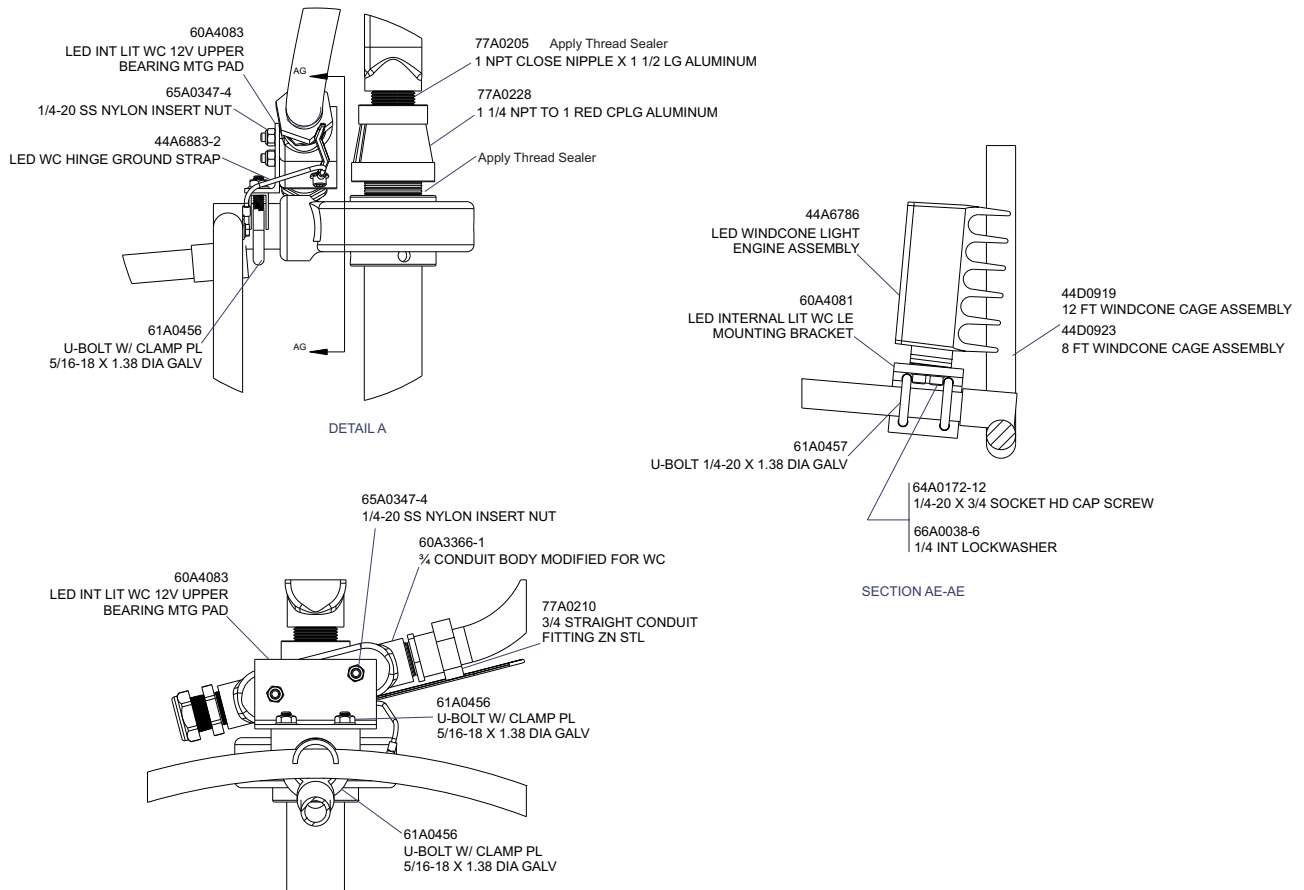
General In-structions

1.3.2.1 Welded Cage Lights

Remove the existing incandescent internally lighted kit as follows:

- Remove the two u-bolts that secure the internal light bar assembly to the sock cage throat ring.
- Remove the Rotating Power Assembly (RPA) from the top of the wind cone shaft. Also loosen the mounting bolts on the upper bearing so that the small rectangular bearing mounting plate can be removed. See Figure 4.
- Remove and discard the small rectangular bearing mounting plate from the upper bearing.
- Remove the Cage Bearing Support Strap and remove the Pipe Cap.
- Pull wires through the wind cone pole so that you can feed a sufficient length of wire into the Surge Protection Enclosure. See Figure 5, Figure 6 and Figure 7.

**Figure 4: Welded Cage Diagrams**



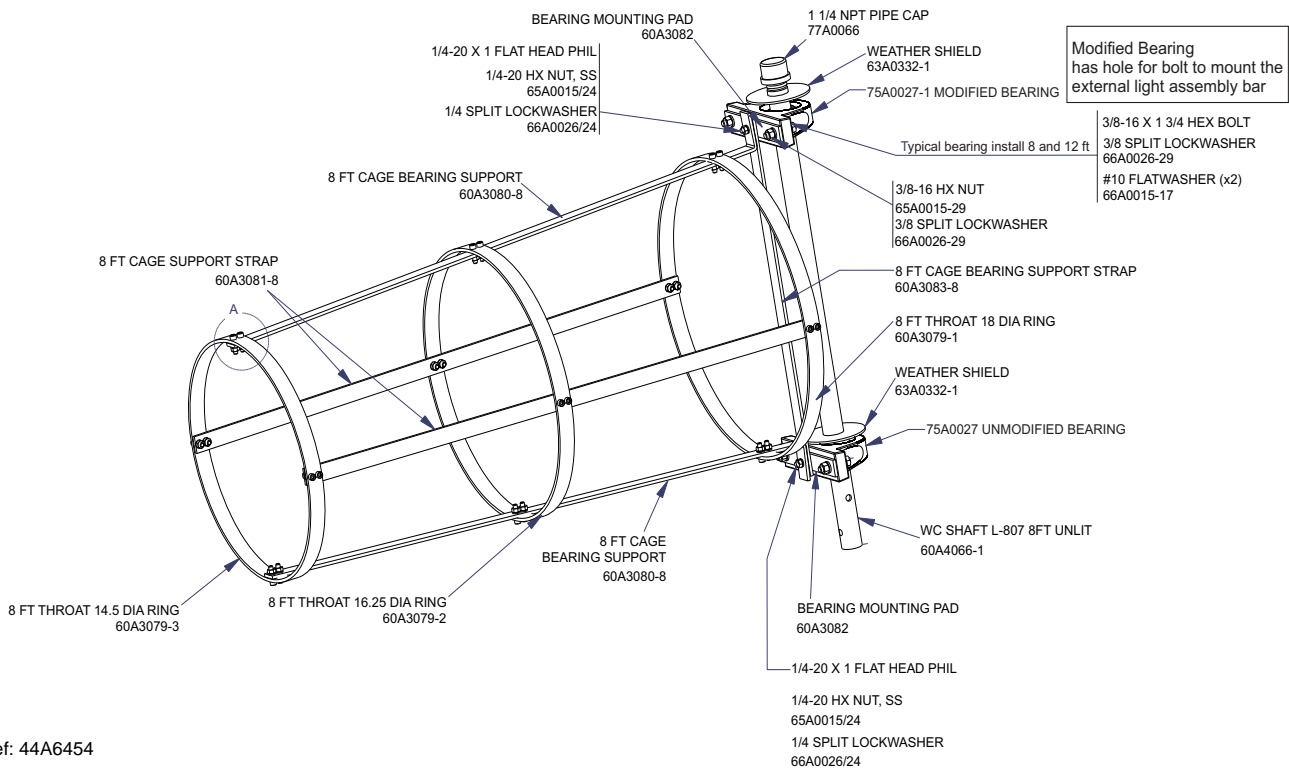
General Instructions

### 1.3.3 Assembling Wind Cone Sock Cage

The sock cage assembly is comprised of the following items: throat ring, mid ring, trail ring and associated connector straps. Assembling these items together is accomplished by using the 1/4-20 x 7/8 Long, Socket Button Head screws, 1/4 lock washer, and 1/4-20 hex nut, mounting hardware supplied.

1. Fasten the two bearing L-shaped support straps to the throat ring (the largest diameter ring) using the pre-drilled holes in the ring and the strap. Install the "L- end" of the two straps to the throat ring 180 degrees apart. Turn the short leg of the strap outward. Tighten all screws and nuts.
2. Fasten the mid ring (next smallest diameter ring) to the next set of holes in the bearing support straps away from the throat ring. Tighten all screws and nuts.
3. Fasten the trail end ring (smallest diameter ring) to the far end of the strap. Tighten all screws and nuts.
4. Fasten the other two straight support straps to all three rings by using the remaining holes in each of the rings. Tighten all screws and nuts.
5. Next fasten the bearing mounting plate at right angles to the bearing support strap and fasten these to items to the L-shaped support strap using a 1/4-20 flat head screw and hex nut. Tighten the flat head screw and nut. Place the bearing on the mounting pad with the shaft collar where the set screws are located, pointing toward the center line of the cage, and fasten with the 3/8-16 screw, heavy flat washer, and 3/8-16 hex nut. Tighten all hardware.

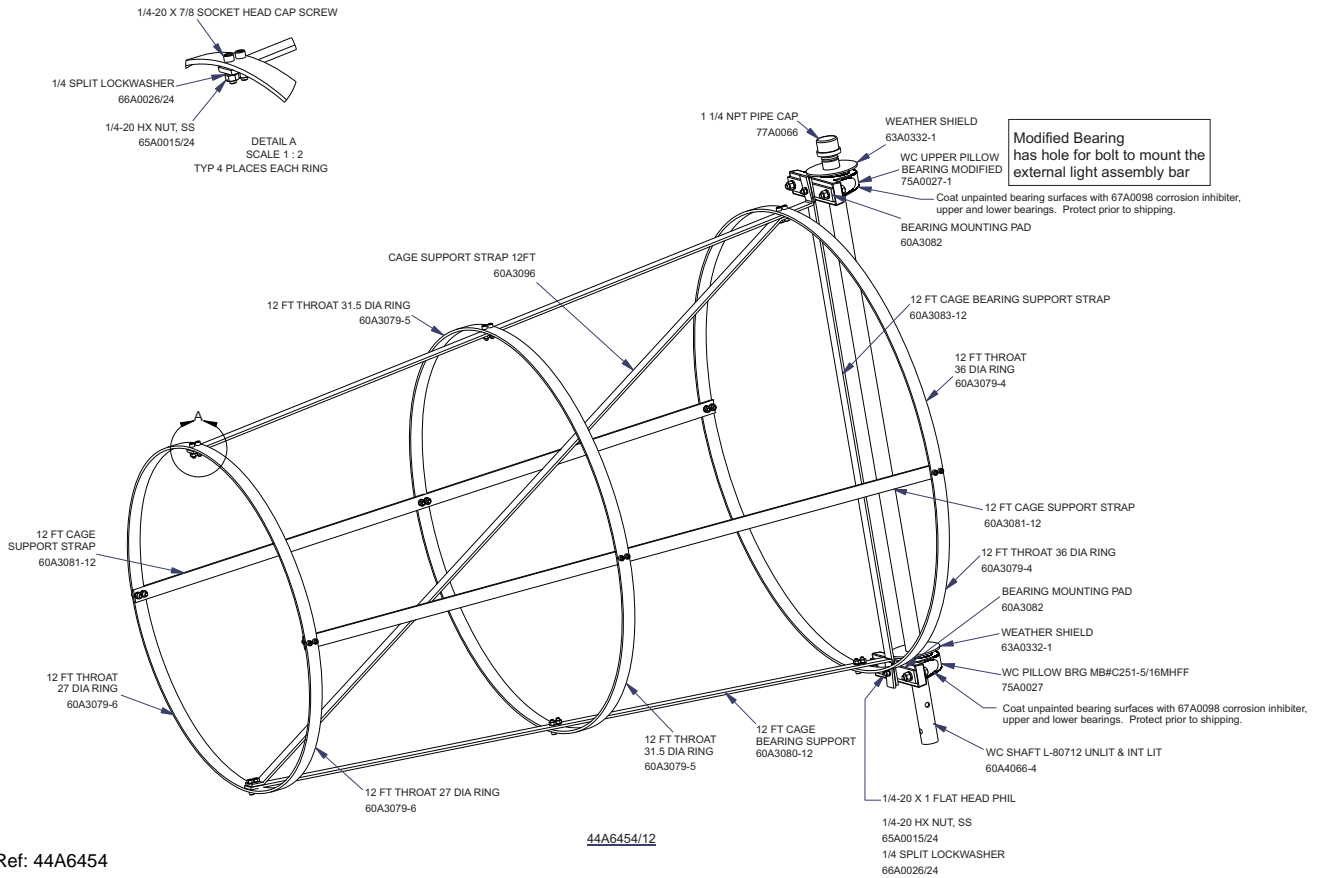
**Figure 5: L-807 - 8 ft WC Cage Assembly Diagram**



Ref: 44A6454



Figure 6: L-807 - 12 ft WC Cage Assembly Diagram



General In-  
structions

1.3.3.1 Assembling the Cage Assembly to the Shaft

1. See Figure 5
2. Slide the first bearing onto the shaft followed by a weather shield onto the shaft. Push the seal down against the bearing. Slide the next bearing followed by a weather shield. Push the shield down against the bearing. Separate the two bearings so that the wind cone cage assembly can be fastened to the L-Shaped straps on the cage assembly. Using the mounting hardware supplied, fasten the cage assembly to the bearings. Tighten all screws and nuts.
3. Position the cage assembly so the first bearing is within 1/8 inch of the weather shield that is installed on top of the pole adapter. Tighten the set screws found in the bearing collar against the shaft.

### 1.3.4 Internally Lighted LED Wind Cone Kit Installation

This subsection describes installation procedures for the internally lighted wind cone using LED's powered by either a series circuit or an external voltage source. The L-810 and the LED light engines are to be connected using the appropriate wiring schematic within the rotating power supply. See Figure 11, Figure 12 and Figure 7.

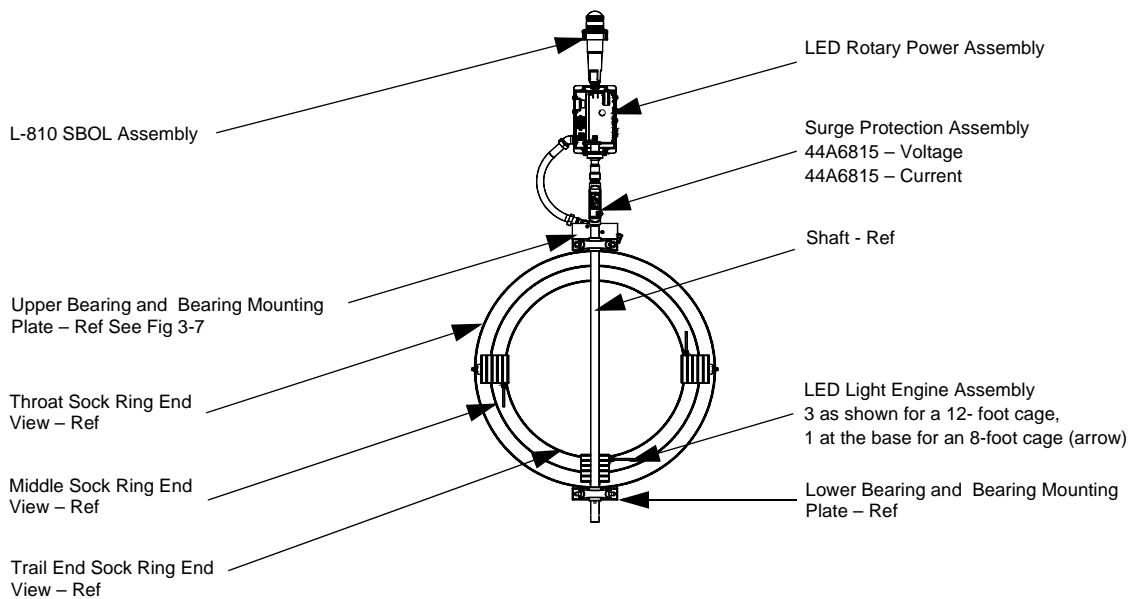
To install the LED internally lighted wind cone kit, perform the following:

#### 1.3.4.1 Installing Rotary Power Assembly

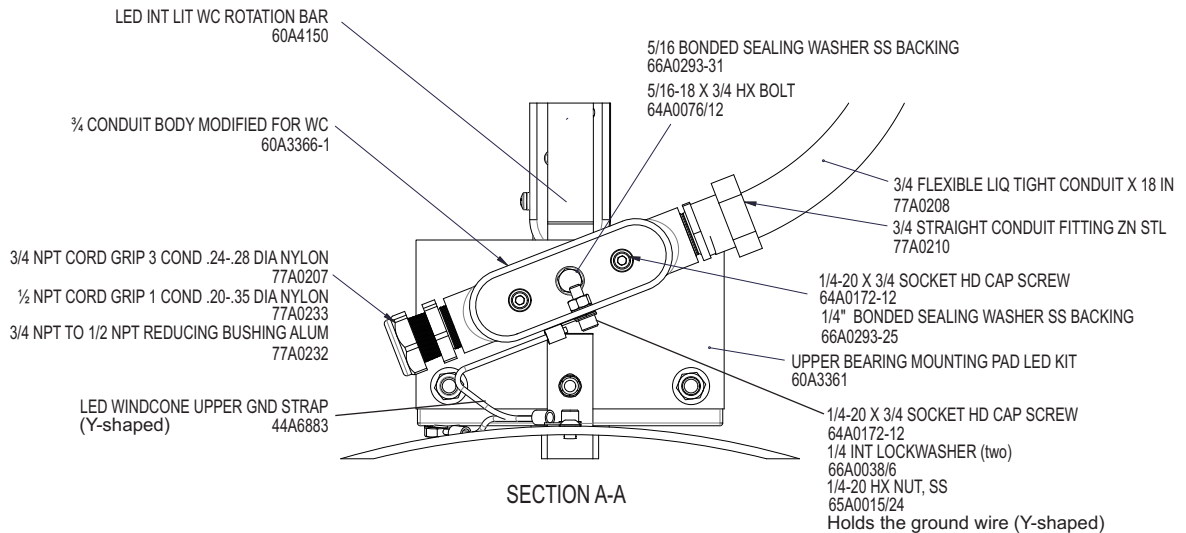
1. Assemble the wind cone by completing steps 1 through 6 in "Assembling Wind Cone Sock Cage" on page 6. See Figure 7.

**NOTE:** Do not install the Rotary Power Assembly onto the shaft until the shaft has been installed through both bearings and the bearings have been attached to the wind cone cage. Insure that the bearing weather seals are installed correctly when the bearings are installed on the shaft.

**Figure 7: Installing Internally Lighted LED Rotary Power Assembly and LED Light Engine Assemblies**



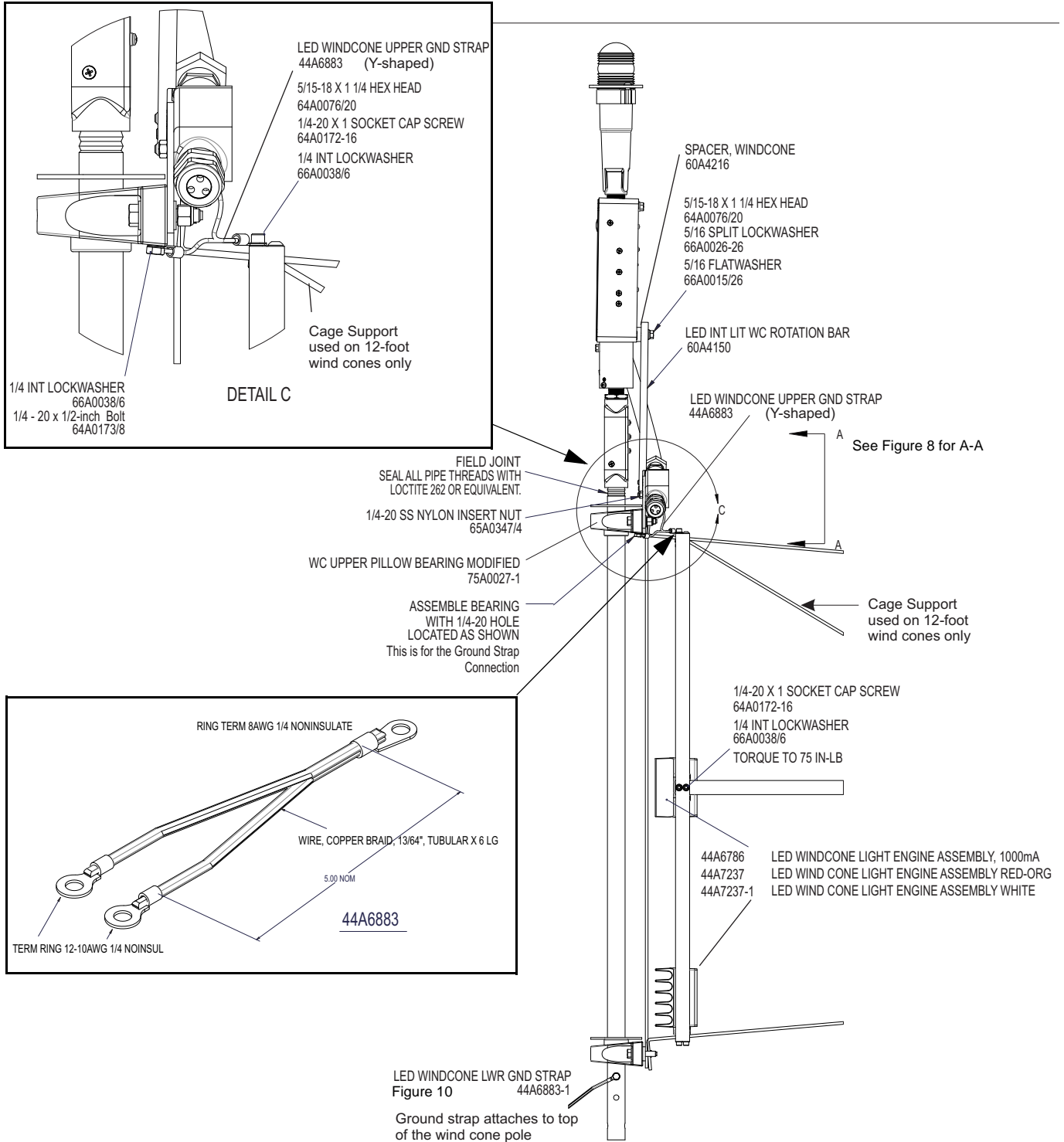
**Figure 8: Installing Internally Lighted Special Bearing Mounting Plate**



General In-structions

2. Mount the special Bearing Mounting Plate (See Figure 8) supplied with the Internal Light Kit along with the L-Shape Cage Strap, to the top of the throat ring.

**Figure 9: Internally Lit Wind Cone Assembly Details**

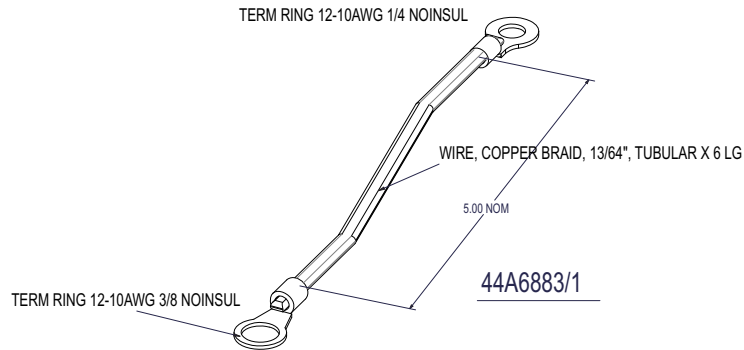


General Instructions

3. Pull wires through the wind cone pole so that you can feed a sufficient length of wire into the Rotating Power Enclosure. Leave some slack required to raise and lower the wind cone. See Figure 27 through Figure 35 for wiring details.

4. Remove the access lids from the Rotating Power Enclosure (RPE) Assembly and the conduit fitting (See Figure 8). Screw the RPE assembly onto the top of the shaft and make connections according to the schematics for the LED voltage or current driven unit. If needed, attach the L-810 SBOL Assembly to the top of the Rotating Power Enclosure and make connections per the wiring schematics.

**Figure 10: Ground Strap 44A6883-1**



### 1.3.5 Installing the Internal LED Light Assembly

5. Install each of the LED Light Assemblies on the Throat Ring of the sock cage. The light assemblies are to be installed at 90, 180, and 270 degrees on the circumference of the throat ring for 12-foot and just one at the base for an 8-foot wind cone (Ref Figure 9).
6. First, start at the 90 degree position and remove the two screws that secure the cage support strap to the throat ring. Mount the light engines by placing the hub on the side of the LED engine enclosure against the cage support strap and the throat ring. Use the two removed screws to mount the LED Engine Assembly. Tighten the screws.

**NOTE:** The hub on the side of the LED Light Engine enclosure indexes and aims each of the LED Engines correctly.

Repeat this process for each of the LED Light Engine Assemblies.

Second, after all of the light engines have been installed, route each of the cables from the enclosure along the edge of the throat ring up to the conduit fitting at the top of the cage. Use supplied wire tie wraps to secure the cables to the throat ring. Insert the cable through the 3-hole grommet in the end conduit fitting.

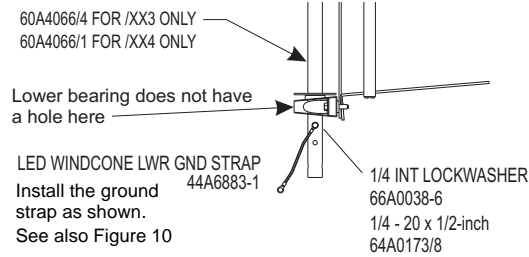
7. Connect the cable leads per the wiring schematics. See Figure 13 through Figure 18 for wiring details.

### 1.3.6 Assembling Wind Cone Shaft into Wind Cone Pole

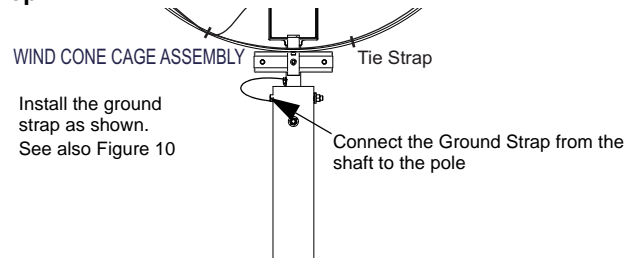
**NOTE:** If you are assembling an externally lighted wind cone, place a saw horse near where the end of the shaft will be located to help support the shaft before inserting the shaft with cage assembly into the pole.

1. Insert the shaft adapter into the end of the pole and align the 2-sets of cross drilled holes in the adapter with the mating holes in the pole. Align the cross drilled holes and insert the 3/8 – 16 hex bolts. Torque hex bolts and hex nuts to 236 In-bs (19.7 Ft-lbs).
2. Install the first weather seal over the shaft and it push down against the pole adapter that is fastened to open end of the pole.

**Figure 11: Wind Cone Cage Assembly on the Pole Assembly**



**Figure 12: Pole Assembly Top**



### 1.3.7 Attach the Windsock

1. Slip the wind sock over the cage assembly and align the drain grommets in the wind sock to face down when the wind cone assembly is raised to the vertical position. Attach the sock to the throat ring by inserting plastic tie-wraps through the grommets in the sock throat and then around the cage throat ring. Pull the tie-wraps tight and trim off excess tie-wrap.

**NOTE:** The bearings are greased at factory. If greasing becomes necessary use only a small amount as over-greasing will make the bearings sluggish and will require more wind to cause the sock cage to vane when the wind blows. A rust-inhibited, water-resistant, lithium-based grease is recommended. In extremely cold climates, wind cone movement may become sluggish. Replace grease with low temperature lubricant. On unlighted cones without the L-810 obstruction light, install pipe cap on the end of the bearing shaft and the bearing cage shaft.

2. Slip the wind sock over the cage assembly and align the drain grommets in the wind sock to face down when the wind cone assembly is raised to the vertical position. Attach the sock to the throat ring by inserting plastic tie-wraps through the grommets in the sock throat and then around the cage throat ring. Pull the tie-wraps tight and trim off excess tie-wrap.
3. Raise the Wind Cone and bolt into place.

General Instructions

1.4 Schematics

Figure 13: 12-foot Internal Current

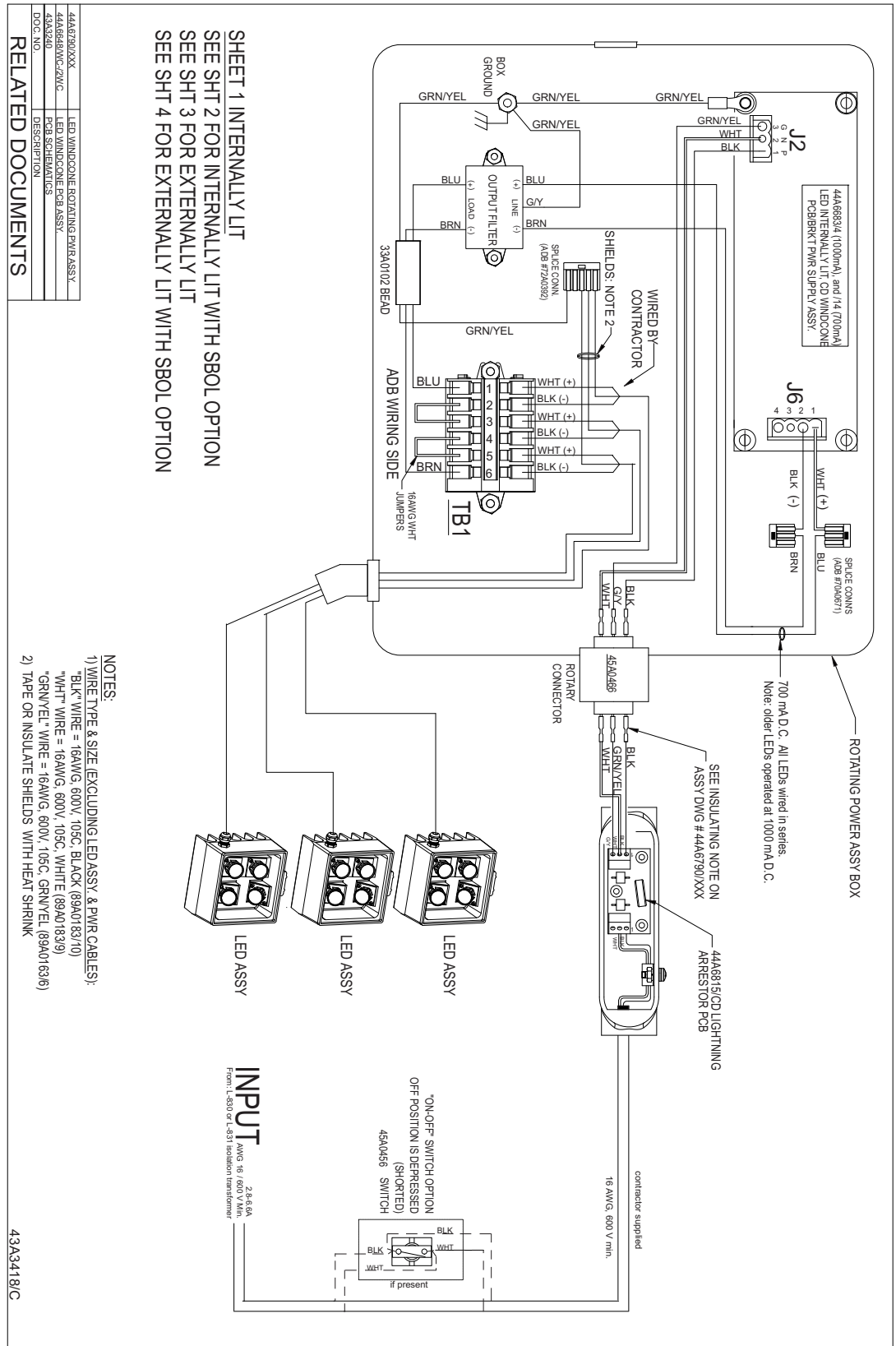
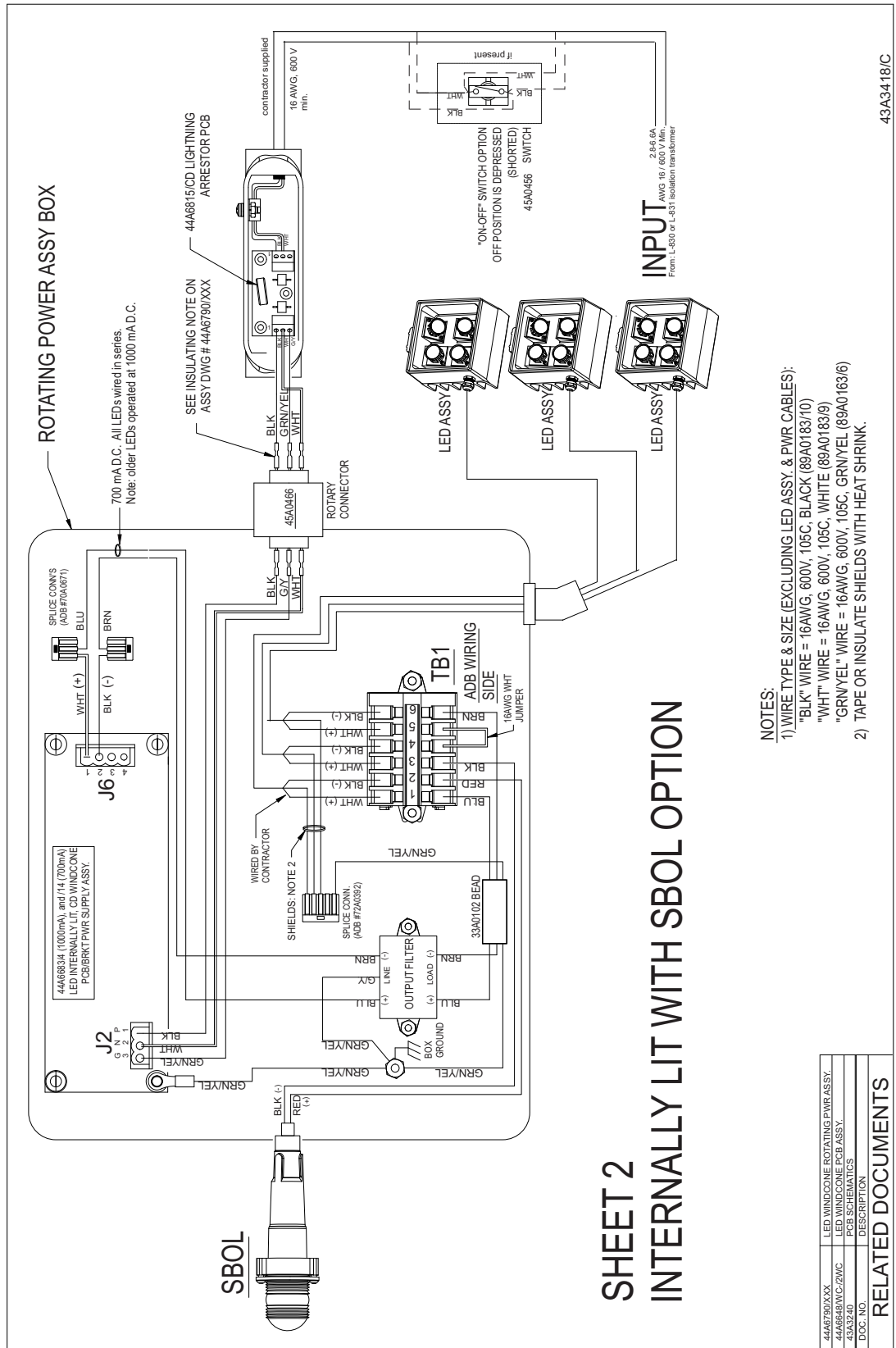


Figure 14: 12-foot Internal Current with SBOL



SHEET 2  
INTERNALLY LIT WITH SBOL OPTION

43A3418/C

Schematics

Figure 15: 8-foot Internal Current without SBOL

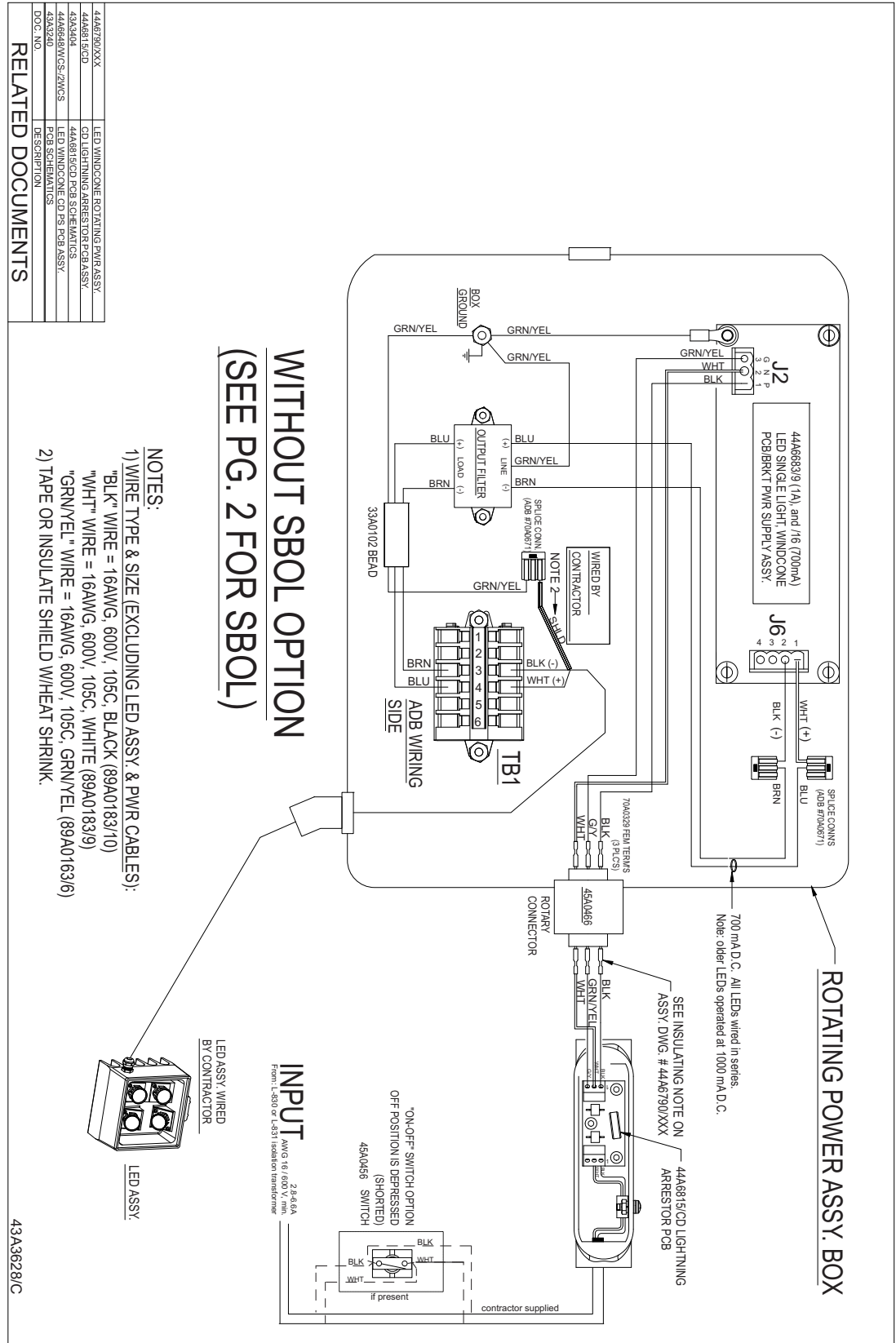
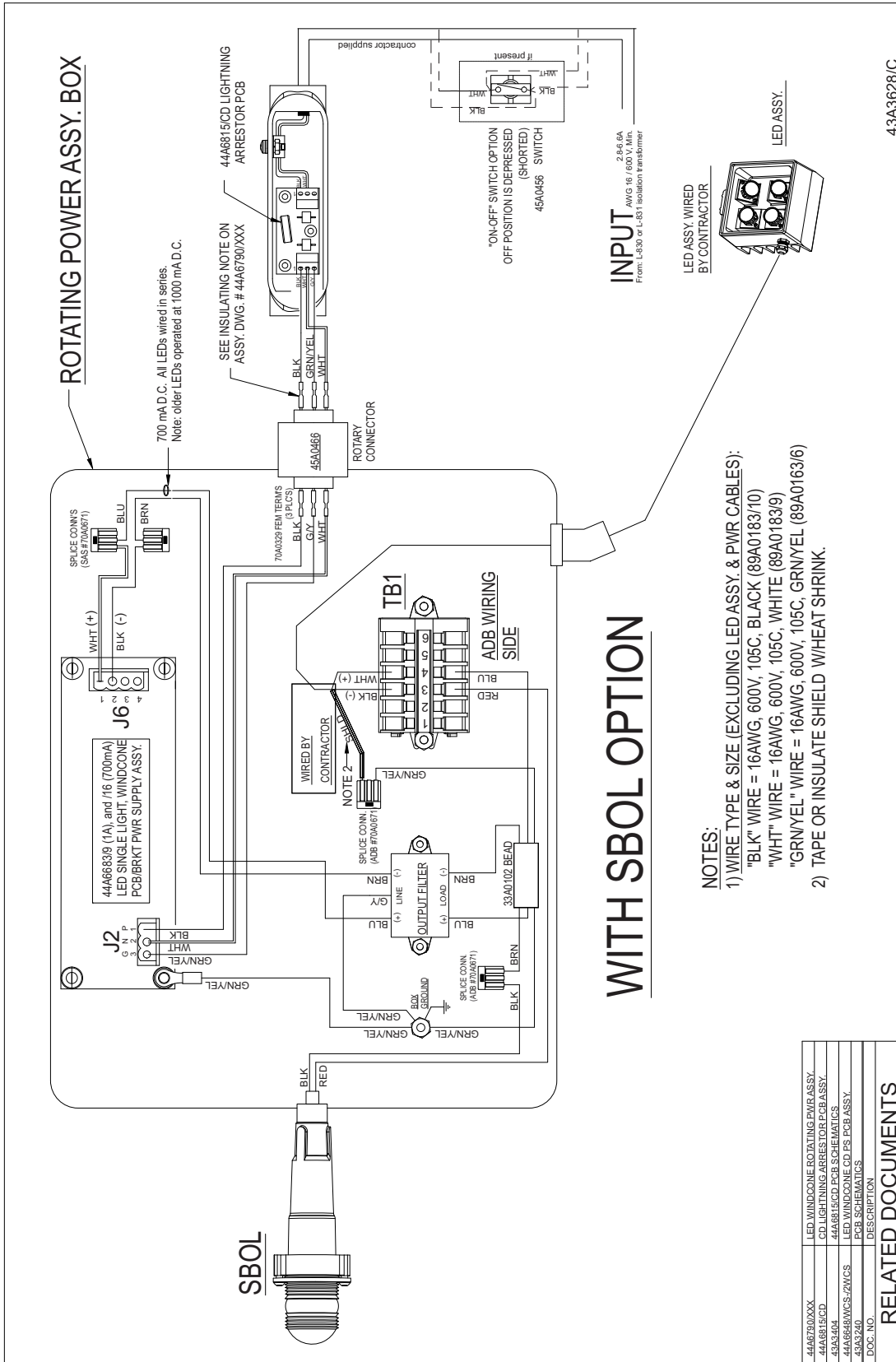




Figure 16: 8-foot Internal Current with SBOL



Schematics

Figure 17: 12-foot Internal Voltage

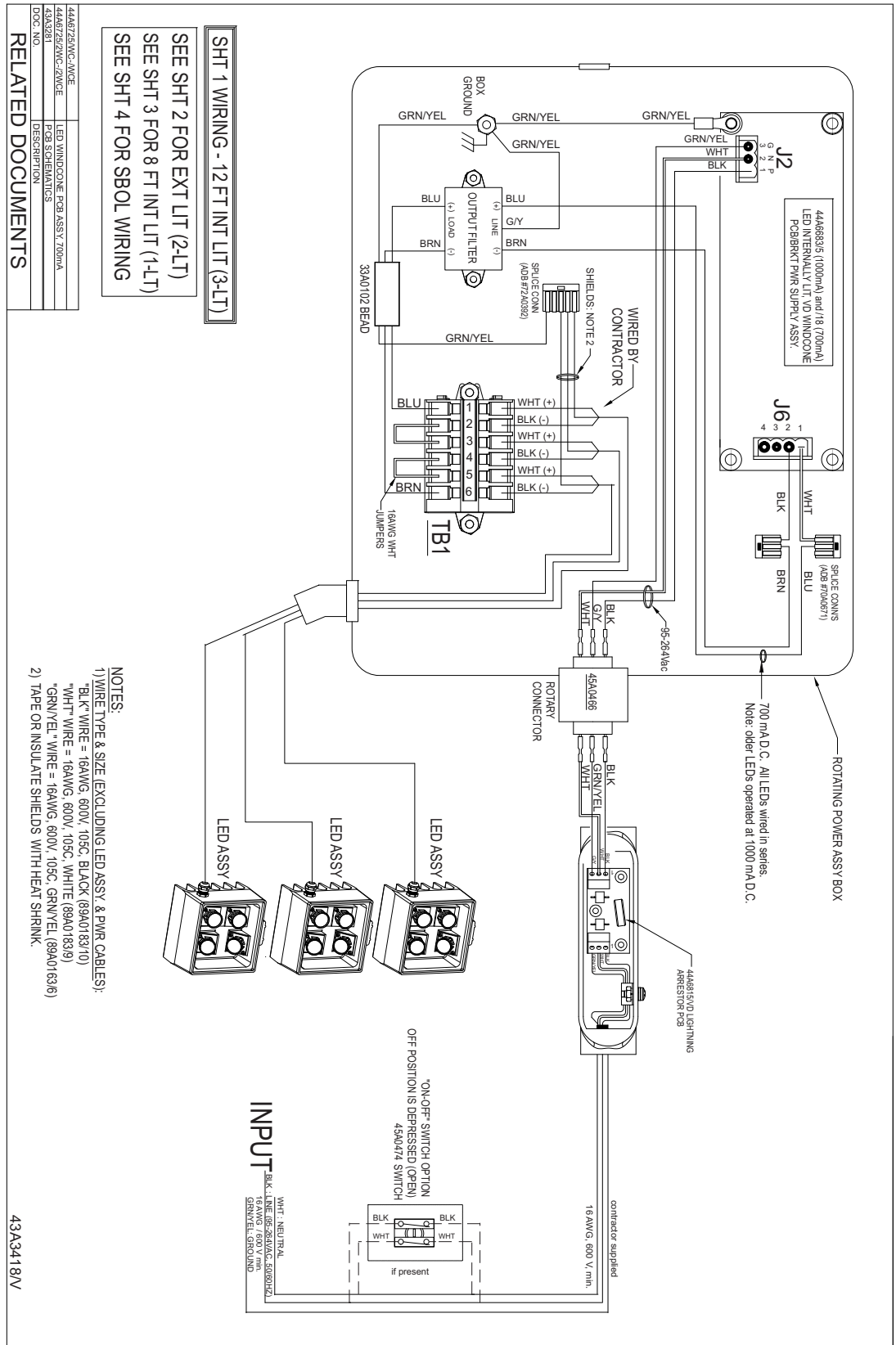
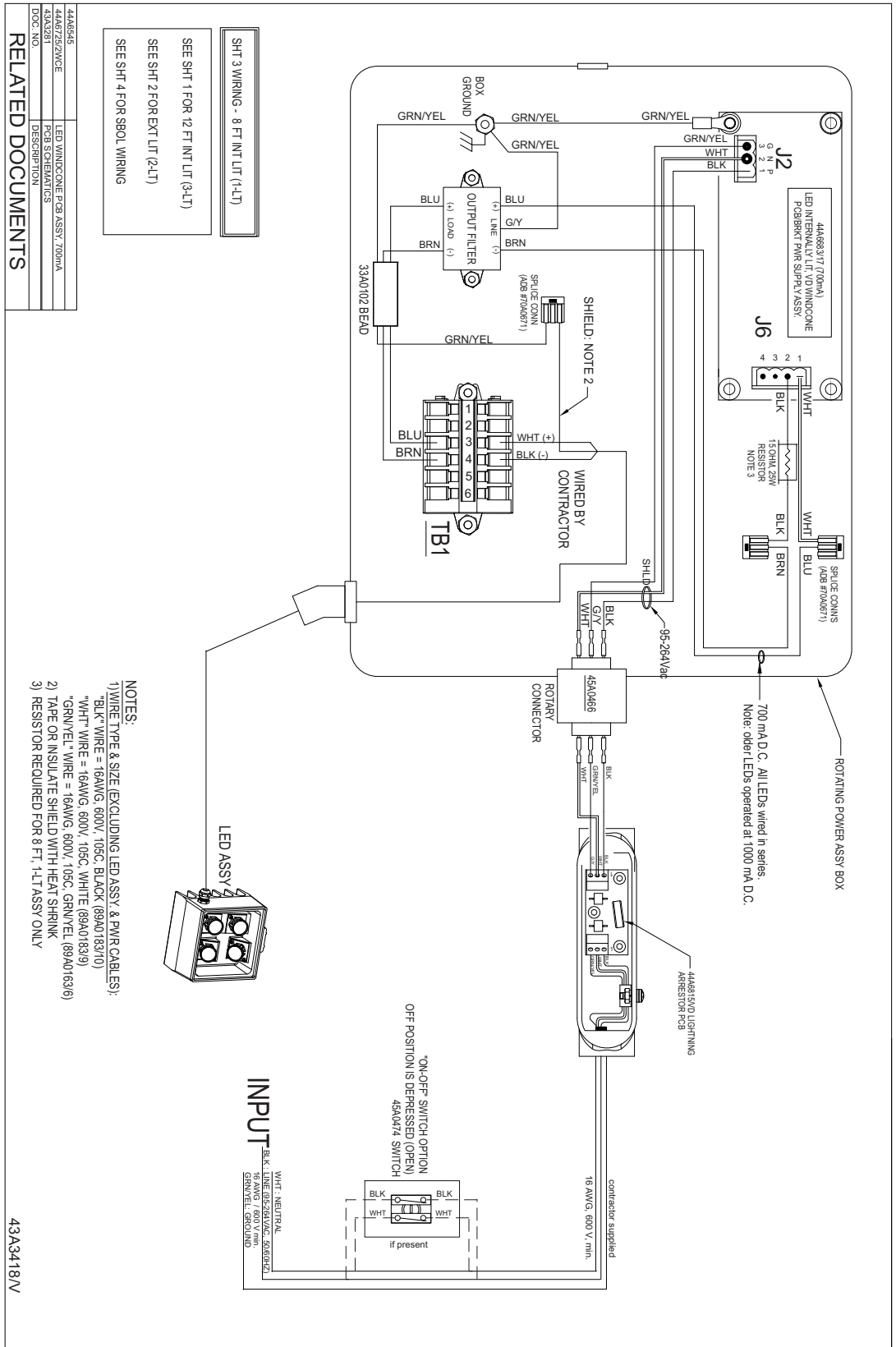


Figure 18: 8-foot Internal Voltage





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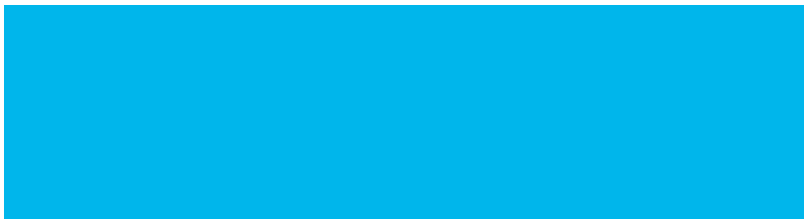
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