



In-pavement Flashing Light

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Record of Changes

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	A	Released manual.	00979	ER	WT	12/10/02
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Section 1

Safety

1. Introduction

This section contains general safety instructions for using your Siemens Airfield Solutions equipment. Some safety instructions may not apply to the equipment in this manual. Task- and equipment-specific warnings are included in other sections of this manual where appropriate. Note all warnings and follow all instructions carefully. Failure to do so may result in personal injury, death, or property damage.

To use this equipment safely,

- refer to the FAA Advisory Circular AC 150/5340-26, *Maintenance of Airport Visual Aids Facilities*, for instructions on safety precautions.
- observe all safety regulations. To avoid injuries, always remove power prior to making any wire connections and touching any parts. Refer to FAA Advisory Circular AC 150/5340-26.
- read and become familiar with the general safety instructions provided in this section of the manual before installing, operating, maintaining, or repairing this equipment.
- read and carefully follow the instructions given throughout this manual for performing specific tasks and working with specific equipment.
- store this manual within easy reach of personnel installing, operating, maintaining, or repairing this equipment.
- follow all applicable safety procedures required by your company, industry standards, and government or other regulatory agencies.
- obtain and read Material Safety Data Sheets (MSDS) for all materials used.

2. Safety Symbols

Become familiar with the safety symbols presented in this section. These symbols will alert you to safety hazards and conditions that may result in personal injury, death, or property and equipment damage.



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

2. Safety Symbols *(contd.)*



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



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



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



CAUTION: Failure to observe may result in equipment damage.

3. Qualified Personnel

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

4. Intended Use



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

Siemens Airfield Solutions cannot be responsible for injuries or damages resulting from nonstandard, unintended applications of its equipment. This equipment is designed and intended only for the purpose described in this manual. Uses not described in this manual are considered unintended uses and may result in serious personal injury, death, or property damage. Unintended uses may result from taking the following actions:

- making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine Siemens Airfield Solutions replacement parts
- failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards

4. Intended Use *(contd.)*

- using materials or auxiliary equipment that are inappropriate or incompatible with your Siemens Airfield Solutions equipment
- allowing unqualified personnel to perform any task

5. Installation

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



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

- Allow only qualified personnel to install Siemens Airfield Solutions and auxiliary equipment. Use only approved equipment. Using unapproved equipment in an approved system may void agency approvals.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Follow all instructions for installing components and accessories.
- Install all electrical connections to local code.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.
- Protect components from damage, wear, and harsh environment conditions.
- Allow ample room for maintenance, panel accessibility, and cover removal.
- Protect equipment with safety devices as specified by applicable safety regulations.
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning.

6. Operation

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

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

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

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

Do not operate a system that contains malfunctioning components. If a component malfunctions, turn the system OFF immediately.

- Disconnect and lock out electrical power.
- Allow only qualified personnel to make repairs. Repair or replace the malfunctioning component according to instructions provided in its manual.

8. Maintenance and Repair

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

- Always use safety devices when working on this equipment.
- Follow the recommended maintenance procedures in your equipment manuals.
- Do not service or adjust any equipment unless another person trained in first aid and CPR is present.

8. Maintenance and Repair
(contd.)

- Connect all disconnected equipment ground cables and wires after servicing equipment. Ground all conductive equipment.
- Use only approved Siemens Airfield Solutions replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.
- Check interlock systems periodically to ensure their effectiveness.
- Do not attempt to service electrical equipment if standing water is present. Use caution when servicing electrical equipment in a high-humidity environment.
- Use tools with insulated handles when working with electrical equipment.

Section 2

Description

1. Introduction

This section describes the Siemens Airfield Solutions In-pavement Flashing Light. The in-pavement flashing light is used in the sequenced flasher portion of the MALSR or ALSF approach lighting systems.

See Figure 2-1. The in-pavement flashing light is designed to provide visual guidance along the taxiway and runway. It is manufactured in accordance with FAA-E-2628 (current edition).



Figure 2-1 In-pavement Flashing Light

2. Component Parts

See Figure 2-2. Each in-pavement flashing light consists of a cadmium-plated iron fixture, which houses the linear xenon flashtube, trigger transformer, and optical assembly. The unique optical assembly ensures that the fixture meets FAA-E-2628 photometric requirements. A safety interlock switch discharges the voltage across the flash lamp when the fixture is opened for service. A 6-core (6-wire) cable (supplied by others) is used between the Individual Control Cabinet (ICC) (supplied by others) and the in-pavement flashing light.

A 6-core cable pigtail is provided with the fixture. Three methods may be used to connect the 6-core cable to the light fixture. In standard installations, a pigtail can be removed for direct attachment of the cable to the junction box. Or the 6-core pigtail can be spliced to the matching 6-core interconnecting cable using a conventional waterproof splice. Or an optional connector (purchased separately) is available to allow the entire fixture to be quickly disconnected from the circuit.

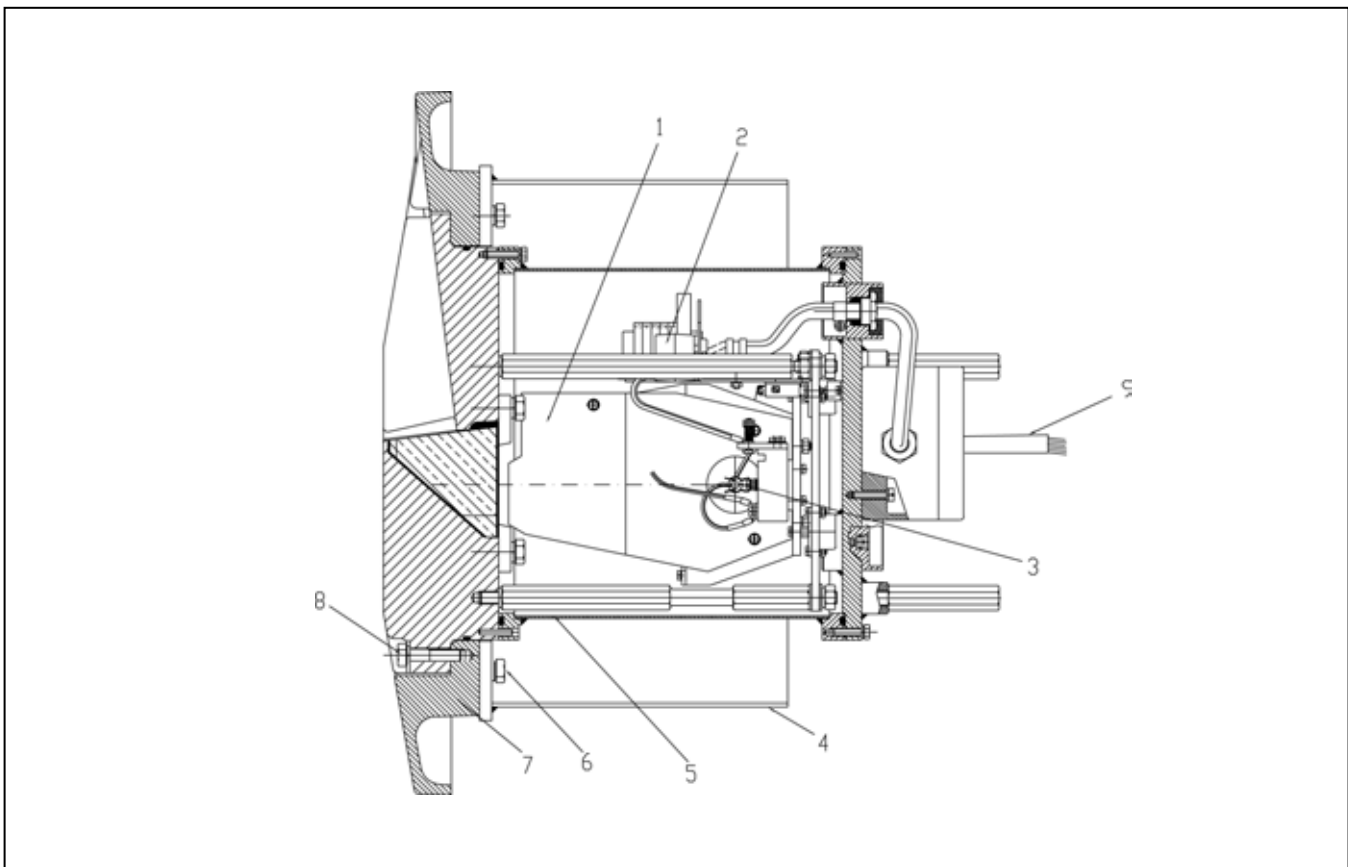


Figure 2-2 Cutaway View of Flashing Light Component Parts (Flasher without PCB Shown)

- | | | |
|------------------------|-----------------------------|--------------------------------|
| 1. Optical Assembly | 4. Light Fixture Can | 7. Outer Ring |
| 2. Trigger Transformer | 5. Iron Fixture | 8. Light Fixture Mounting Bolt |
| 3. Flash Tube | 6. Outer Ring Mounting Bolt | 9. Pigtail |

3. In-pavement Flashing Light: Required Equipment

Refer to Table 2-1 for required equipment that is supplied. Refer to Table 2-2 for required equipment that is not supplied. Refer to Table 2-3 for optional equipment. Refer to the *Parts* section for part numbers.

Table 2-1 Required Equipment Supplied

Description	Quantity
In-pavement flashing light	1
Instruction manual	1 per order

Table 2-2 Required Equipment Not Supplied

Description	Quantity
Torque wrench (0 to 200 in-lb) (0–22.6 Nt-M)	1
Alignment jig	1
Drill, 13 in. (330 mm diameter)	1
Saw, 3/8 in. (9.525 mm) thick	1
Small water suction pump	1
Eyebolt, 3/8 in. (9.525 mm) diameter	2
Lifting rod, 16 in. (406 mm) long	1
Set of fiber brushes	1
Set of socket wrenches, 1/2 in. (12.7 mm) drive	1
Set of screwdrivers, one with 3/8 in. (9.525 mm) minimum blade width	1
Silicone grease	As required
Joint sealing filler	As required
Loctite 242	As required

NOTE: Required equipment not supplied may vary according to the local site requirements.

Table 2-3 Optional Equipment

Description	Quantity
Connector	1
6-core cable	As required
LB-4 deep base	1

4. Specifications

This subsection provides information for the in-pavement flashing light.

Flash Lamp Voltage

Refer to Table 2-3.

Table 2-4 Flash Tube Voltage

Item	Specification
Flash lamp voltage	2 kV
Anode voltage	2 kV nominal \pm 10%
Triggering voltage	9 kV minimum – 12 kV nominal – 18 kV maximum
Maximum energy per flash	120 J
Maximum power	120 W

Lamp

The lamp is a linear xenon flashtube.

Lamp Life

The average lamp life is 1000 hours on high-intensity step.

Mounting

The fixture with outer ring is mounted on an LB-4 or modified LB-4 base. In standard installations, it is recommended that the 6-core flasher cable (purchased separately) be run through a PVC pipe with a minimum internal diameter of 2 inches (50.8 mm).

Photometric Intensity

Refer to Table 2-5.

Table 2-5 In-pavement Photometric Data

Intensity Setting	Maximum Effective Intensity	Minimum Effective Intensity	Beam Spread	
			Horizontal	Vertical
High	20,000 cd	5,000 cd	+15 degrees	+2 to +12 degrees
Medium	2,000 cd	500 cd		
Low	600 cd	150 cd		

Dimensions with Outer Ring

18.3 in. (464 mm) (height) x 22 in. (559 mm) (diameter)

Weight

Fixture: 147 lb (67 kg)

Outer ring: 40 lb (18 kg)

Section 3

Installation



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

1. Introduction

This section provides instructions for installing the in-pavement flashing light. Refer to airport project plans and specifications for the specific installation instructions. The installation shall conform to the applicable sections of the National Electric Code and local codes.

2. Unpacking

To avoid unnecessary damage to the light assembly, remove the light fixture at the installation site.



WARNING: The light fixture with can is heavy. Use two people to lift the fixture.

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

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

3. Installing In-pavement Flashing Light on Light Base

This subsection provides installation information for the MALSR and ALSF in-pavement flashing light. It discusses how to connect the Individual Control Cabinet (ICC) wiring to the light fixture and how to install the light fixture on the base.

Connecting ICC Wiring to Light Fixture

Connect the separately supplied ICC cable (part number 6104.90.206) to the in-pavement flashing light. Three methods may be used to connect the 6-core cable: use the junction box termination, use an optional flash head connector, or splice the cable wire. Refer below for a discussion of each method. Refer to *Optional Parts* in the *Parts* section for the 6-core cable part number.

NOTE: For distances over 100 feet between the ICC cable and the light fixture, always use the in-pavement light fixture with PCB option (part number 44A6234-2).

Junction Box Termination

See Figure 3-1. See also Figure 7-1 in the *Wiring Schematics* section. The preferred method for connecting the 6-core cable is using the junction box termination. If the Siemens Airfield Solutions wire (part number 6104.90.206) is used, termination can be made inside the wire junction box (2) on the bottom of the flash head after removing the pigtail (1) provided.

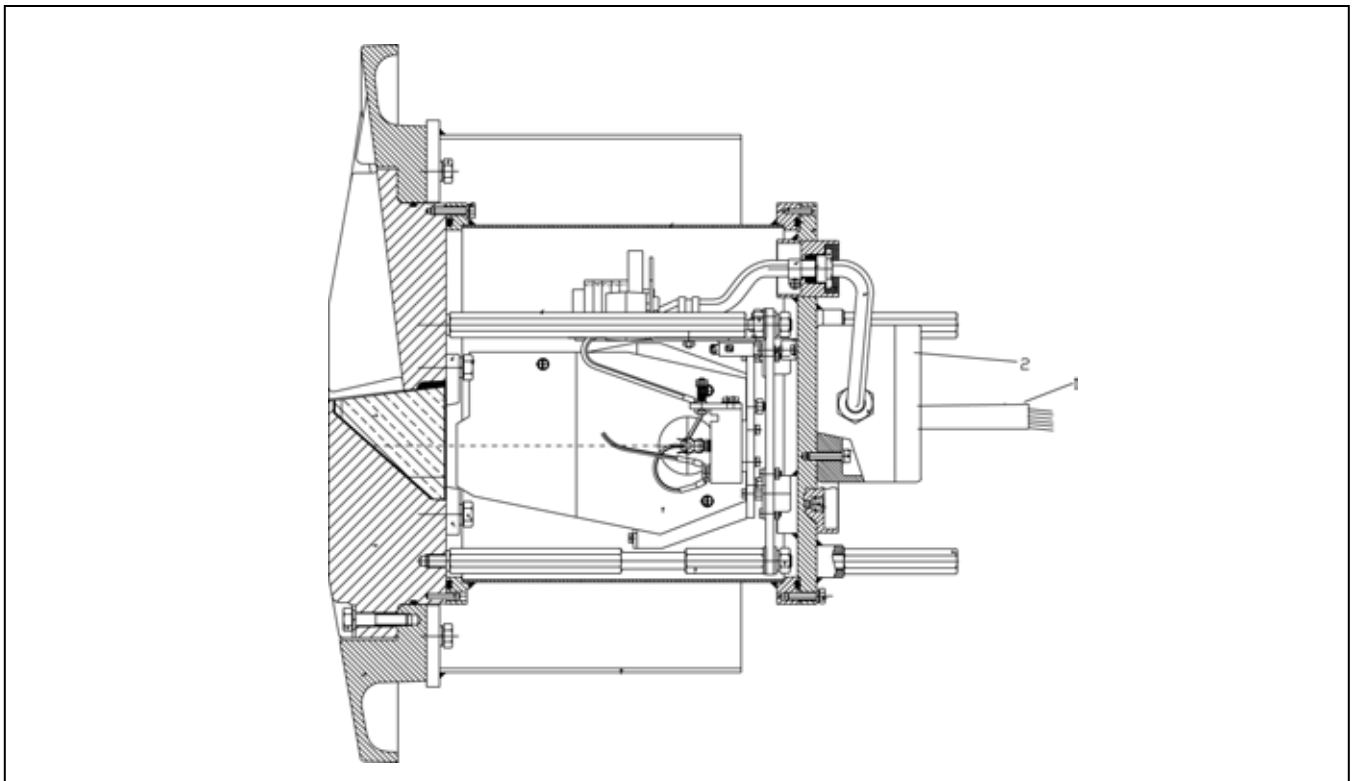


Figure 3-1 Junction Box Termination Wiring Method

1. Pigtail
2. Junction Box

Optional Flash Head Connectors

The second method for connecting the 6-core cable is to use an optional flash head connector. The optional connector is intended to be used with a 6-core cable that has an outside diameter of 0.510 in. Refer to *Optional Parts* in the *Parts* section for connector kit and cable part numbers.

To assemble the optional in-pavement flasher connector assembly, perform the following procedure:

1. Prepare the cable wire by stripping wire ends to specified lengths as shown in Figure 3-2. Be careful not to cut through outer jacket into individual wire insulation. Repeat for all six wires.

NOTE: Connectors are designed to be used with Siemens Airfield Solutions 6-core cable wire (part number 6104.90.206).

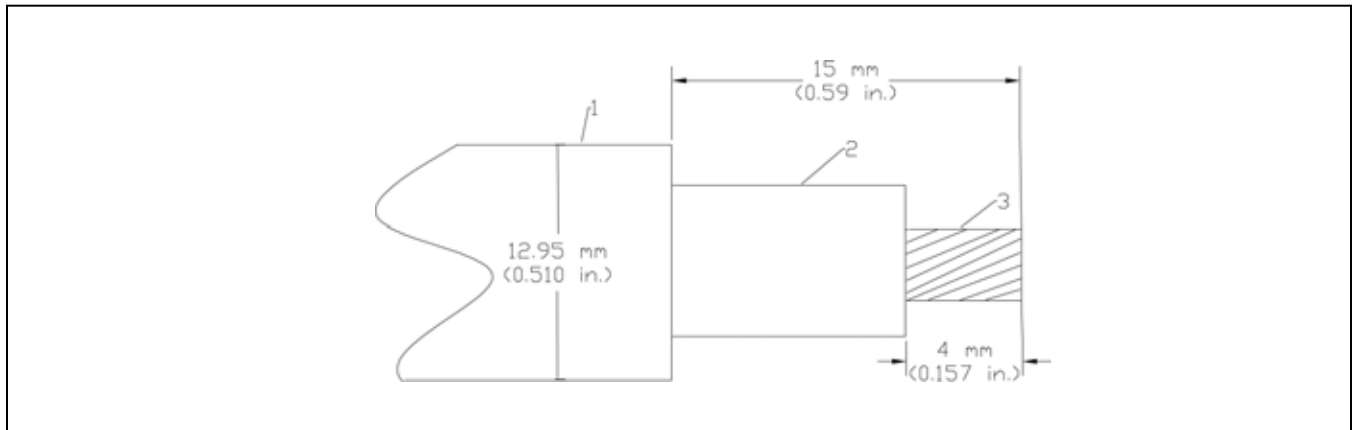


Figure 3-2 Stripping Wire Ends

1. Wire Jacket
2. Wire Insulation
3. Wire

2. Assemble connector pieces onto wire as shown in Figure 3-3.

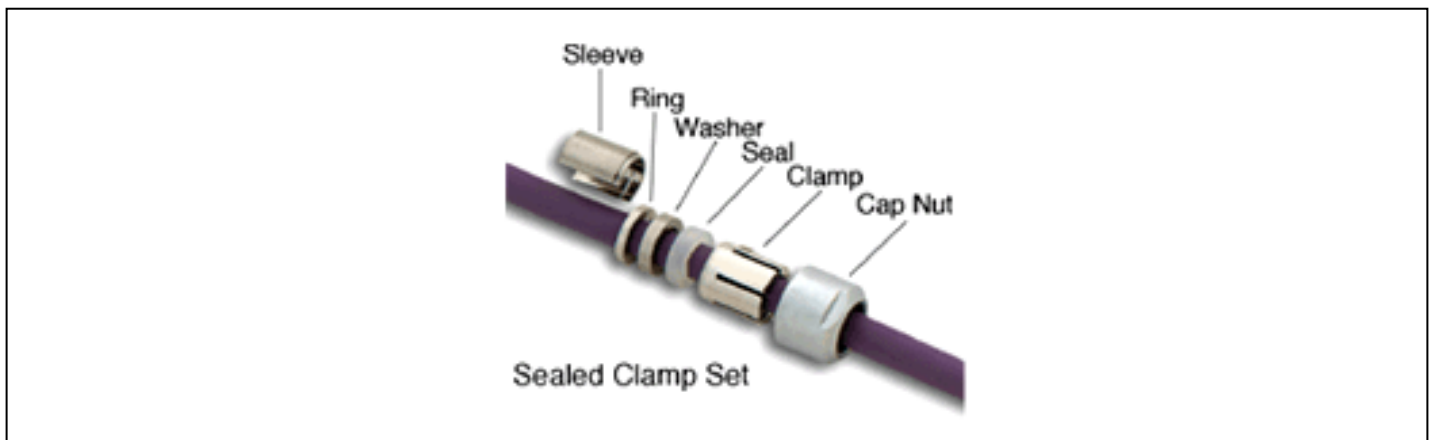


Figure 3-3 Sealed Clamp Set

Optional Flash Head Connectors *(contd.)*

3. Solder contacts by performing the following procedure:
 - a. Slide 7 mm (0.276 in.) pieces of supplied heat shrinkable tubing over individual contacts.
 - b. Solder cable conductors to contacts with Rosin core solder according to the wiring diagram in Figure 3-4. Refer to Table 3-1 for wiring functions.

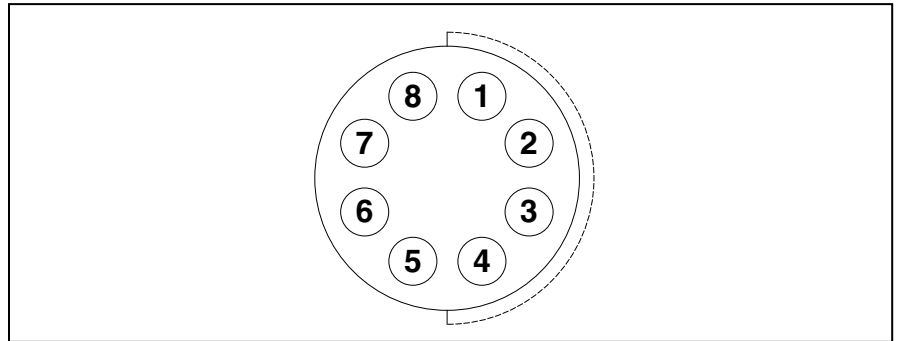


Figure 3-4 Wiring Diagram (Female Connector)

Table 3-1 Wiring Color and Functions

Item	Function	Color
1	Lamp anode 2kV	Brown
2	No connect (NC)	Not applicable
3	Safety relay (120 V)	Black
4	Lamp cathode 2 kV return	Gray
5	Trigger	Blue
6	Safety relay (120 V)	Black
7	Trigger return	Yellow green
8	No connect (NC)	Not applicable

- c. Slide heat shrinkable tubing over contacts and solder joints.
 - d. Apply heat to shrink.
4. Slide ring toward contact block and position sleeve between contact block and ring. Make sure that the ring does not move off the end of the outer jacket.

Optional Flash Head Connectors (contd.)

- See Figure 3-5. Slide all remaining components along the cable toward the contact block.

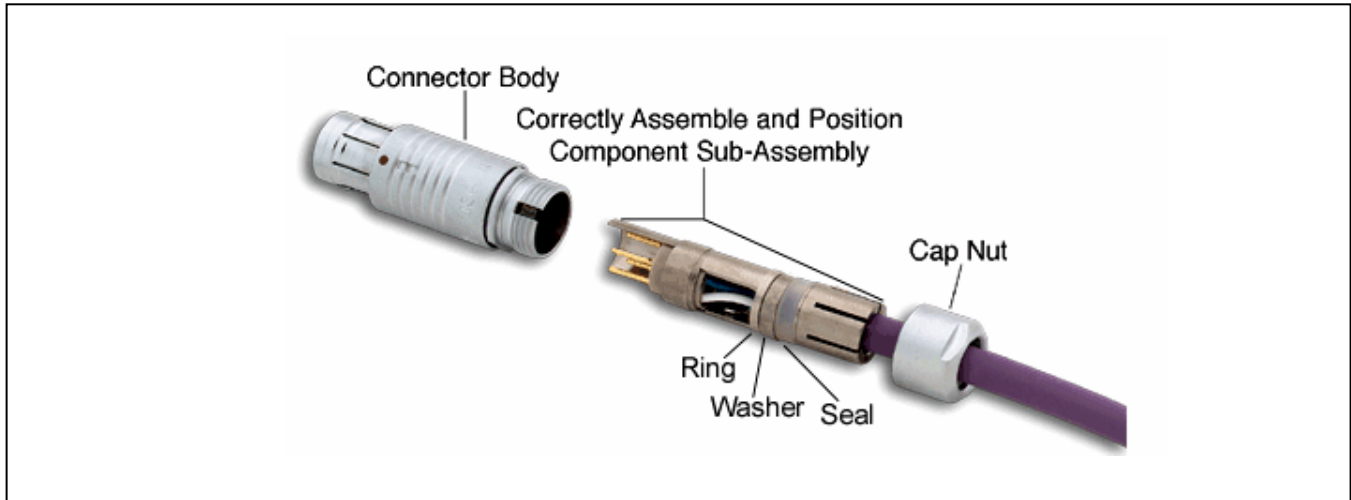


Figure 3-5 Final Connector Assembly

- Carefully slide connector body over component sub-assembly.



CAUTION: The connector body is keyed so that it will easily slide over the sub-assembly. Do not force the connector body onto the sub-assembly or permanent damage to the connector will result.

- Apply locking compound to the connector threads. Place cap nut onto the connector body and tighten with torque wrench as shown in Figure 3-6 to 8 Nm (70.8 inch-pounds).

NOTE: Connectors are supplied with watertight end caps. Connectors are ***ONLY*** watertight when plugged into mate or end cap. Any connector left unplugged from mate should be plugged into an end cap to prevent moisture from entering contact area.

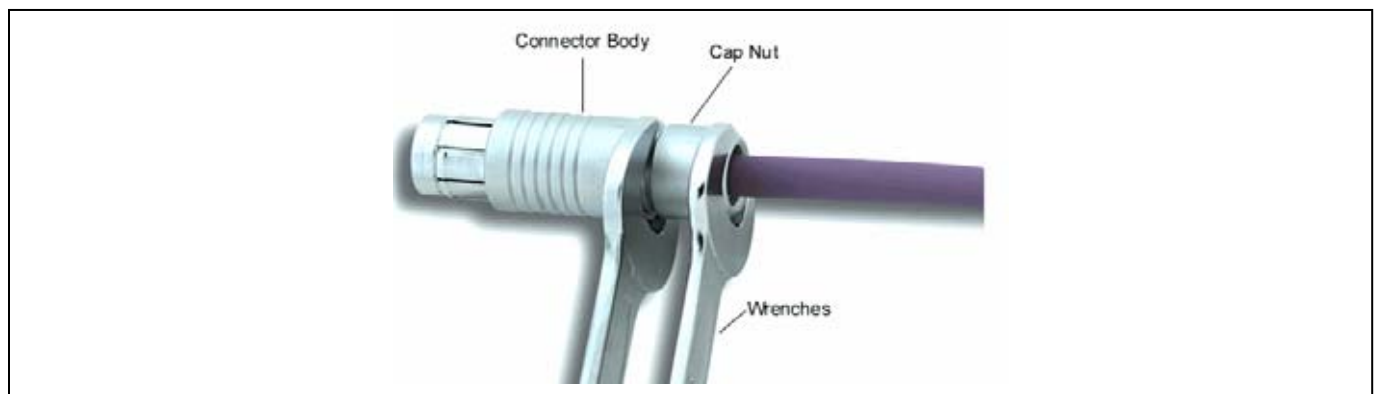


Figure 3-6 Mounting Cap Nut

Splicing Cable Wire

The third method for wiring is by splicing to the pigtail (See Item #9 on Figure 2-2) and heatshrinking with a watertight seal.

Installing In-pavement Flashing Light

To install the in-pavement flashing light on the LB-4A or LB-4 modified base, perform the following procedure:

1. See Figure 3-7. Clean the light base (2) receptacle. Make sure that the base receptacle does not contain water and is completely clean and dry. The mating surfaces must be clean and free of foreign particles.

NOTE: In Figure 3-7, the Individual Control Cabinet and Junction Box are supplied by others.

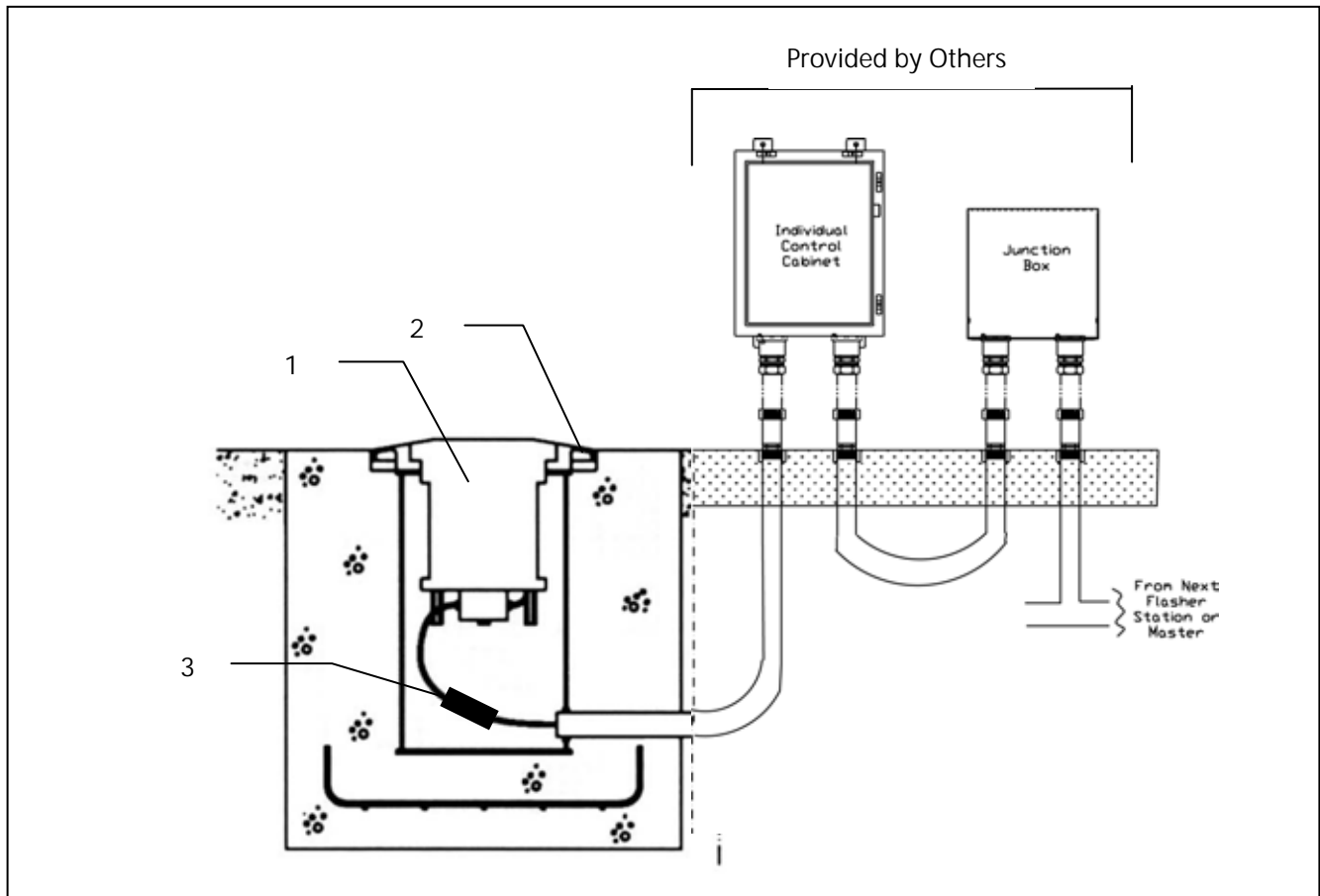


Figure 3-7 Installing In-pavement Flashing Light on Light Base

1. In-pavement Flashing Light Assembly
2. Light Base
3. Optional Flash Head Connector

Installing In-pavement Flashing Light *(contd.)*

2. Place the adapter ring on the base and align 3/8-16 taped holes with the six holes in the base flange.
3. Bolt the adapter ring to the light base. Use six contractor-supplied bolts and lock washers and insert the bolts from inside the base through the holes in the light base flange.



CAUTION: A gasket has not been supplied and no gasket is required between the adapter ring and the base. Do not install a gasket between the adapter ring and the base. Installing a gasket prevents correct load transfer when aircraft rolls over it and hinders torquing operation.

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

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

Installing In-pavement Flashing Light *(contd.)*

5. If using anti-seize lubricate on the threads instead of thread locking adhesive, check with the manufacturer of the anti-seize lubricate to find out what the **Lubricity "k" factor** is for the compound that you are going to be using and then refer to Table 3-2.

Table 3-2 Determining Torque Based on "K" Factor

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

NOTE: Always torque the bolts across the corners. See Figure 3-8. To torque the outer bolts across corners, tighten bolts in noted sequence: #1 and #4, then #2 and #5, then #3 and #6.

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

NOTE: After several re-lampings, threaded holes may accumulate with dirt and excessive Loctite. If this occurs, screws may not seat properly. Clean tapped holes with wire brush or hand tap, then blow off with clean, dry, oil-free low pressure air, or use Loctite Chisel 79040 and spray on threads and allow to soak for 15-30 minutes, depending upon the amount of build-up. Wipe off or blow off with clean, dry, oil-free low pressure air. After the bolt has been retorqued three times, replace with new bolt. If the bolt is continuously loose, inspect tapped thread in the light base flange for damage. If thread is damaged, contact Siemens Airfield Solutions, Inc., Sales Department for field repair inserts kit.

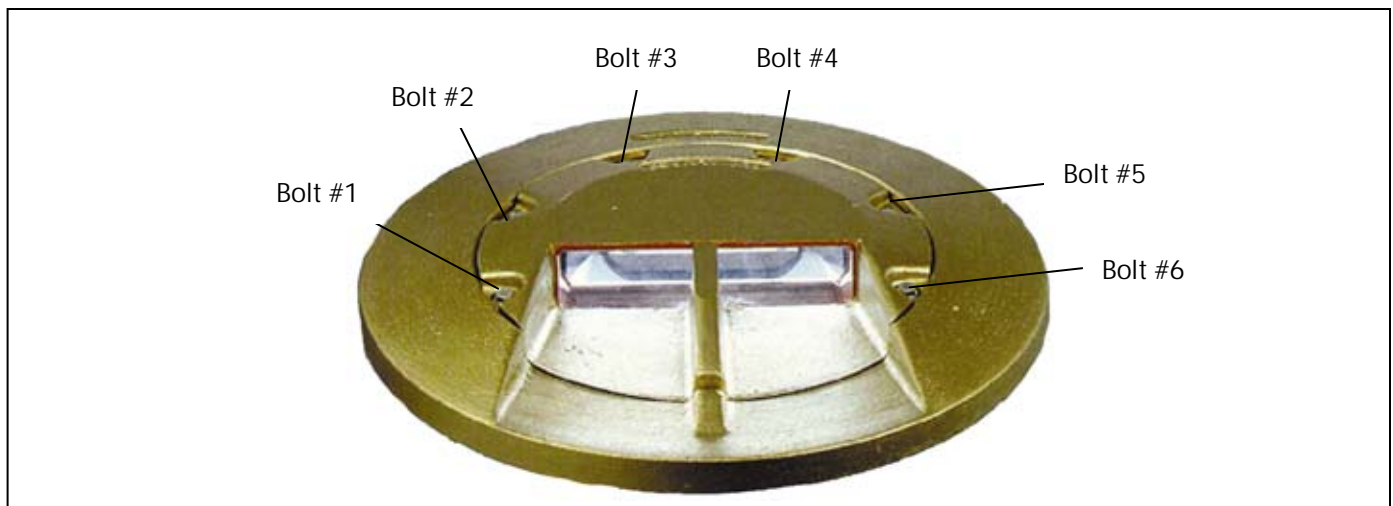


Figure 3-8 Torquing Outer Mounting Bolts

Installing In-pavement Flashing Light *(contd.)*

6. Turn on the power to check that the lamp will illuminate. Operate for a minimum of one minute in each intensity step
7. Turn off power.
8. Insert the optical assembly into the adapter ring.
9. Repeat steps 4 and 5 for installing the six bolts and lock washers for the six outer ring light assembly mounting bolts supplied with the in-pavement fixture. The outer ring mounting bolts are located underneath the light fixture. See Figure 2-2 for mounting bolt location.
10. After installation is complete, operate the in-pavement flashing light for a minimum of 15 minutes in each step. Verify that no misfiring occurs.
11. Verify that the lamp monitoring system functions properly in the individual control cabinet. See the flasher system manufacturer's manual for details.

Section 4

Maintenance

1. Introduction

This section provides maintenance information and procedures for the in-pavement flashing light.

2. Maintenance Schedule

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

To keep the in-pavement flashing light operating efficiently, follow a preventive maintenance schedule. Refer to Table 4-1. Refer to FAA-E-2628 (current edition) for additional general guidance.

Table 4-1 In-pavement Flashing Light Fixture Maintenance

Interval	Maintenance Task	Action
Daily	Check for burned-out lamp. Check for dim lamp.	Replace lamp and film disc cutout, if used. Refer to <i>Replacing Lamp</i> in this section. Clean optical surface if dirty. Check for misalignment or presence of moisture in fixture.
Weekly	Check for dirty channel, lens, mirror, reflector, and prism.	Clean dirty parts on the optical assembly. Refer to <i>Cleaning Optical Assembly</i> in this section.
Every 60 days, or whenever the light assembly is serviced	Check for moisture in the light fixture.	Open up the light fixture. Clean, dry, and inspect the light assembly. Replace O-ring.
	Check for improper torque on holddown bolts.	If using anti-seize lubricate on the threads, instead of threadlocking adhesive, check with the manufacturer of the anti-seize lubricate to find out what the Lubricity "k" factor is for the compound that you are going to be using and then refer to Table 3-2. If thread locking adhesive is used, apply only one drop of Grade AV Loctite® to each of the six 3/8-inch (9.525-mm-) diameter optical assembly mounting bolts. Torque the bolts to 185 ±5 inch-pounds (20.902 ± 0.565 Nt-m). Refer to <i>Retorquing Mounting Bolts</i> in this section.

Continued on next page

2. Maintenance Schedule

(contd.)

Table 4-1 In-pavement Flashing Light Fixture Maintenance

Semi-annually	Check to see if water is present in the light base.	If practical, remove water from the base. Remove and inspect light for water damage. Refer to <i>Removing Light Base Water</i> 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 150/5200-23.

3. Maintenance Procedures

This subsection describes the following maintenance procedures:

- replacing lamp
- cleaning optical assembly
- retorquing mounting bolts
- removing light base water
- lifting optical assembly out of base

Replacing Lamp



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



WARNING: Allow time for the unit to cool. High interior temperatures may cause severe burns to personnel. Failure to observe this warning may result in personal injury.

The preferred method of maintaining the in-pavement flashing light is to periodically and systematically replace the light assembly and return the replaced assembly to the maintenance shop for renovation. As an alternative, you can service the light assembly in the field. It is recommended, however, that field servicing be limited to cleaning lenses and replacing lamp(s).

NOTE: If any lamps are out, record the location of the fixture and replace the lamp when the circuit is turned off.

Replacing Lamp *(contd.)*

To replace the lamp, perform the following procedure:

1. See Figure 4-1. Remove the optical assembly from the adapter ring, and disconnect from the power source. Refer to *Lifting Optical Assembly out of Base* in this section.

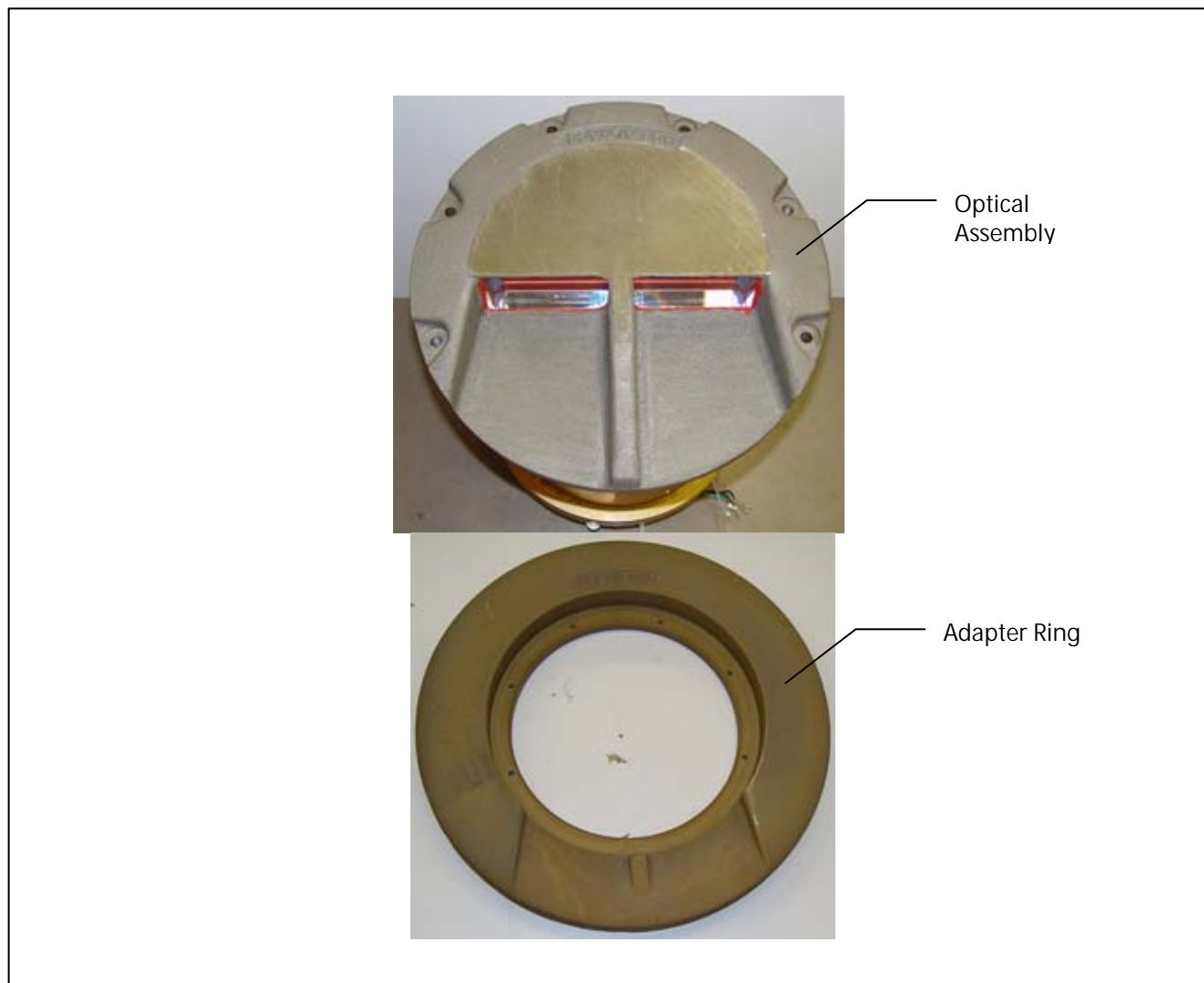


Figure 4-1 Optical Assembly and Adapter Ring

Replacing Lamp *(contd.)*

2. See Figure 4-2. Turn the light fixture upside down and remove the 8 screws on the bottom plate.

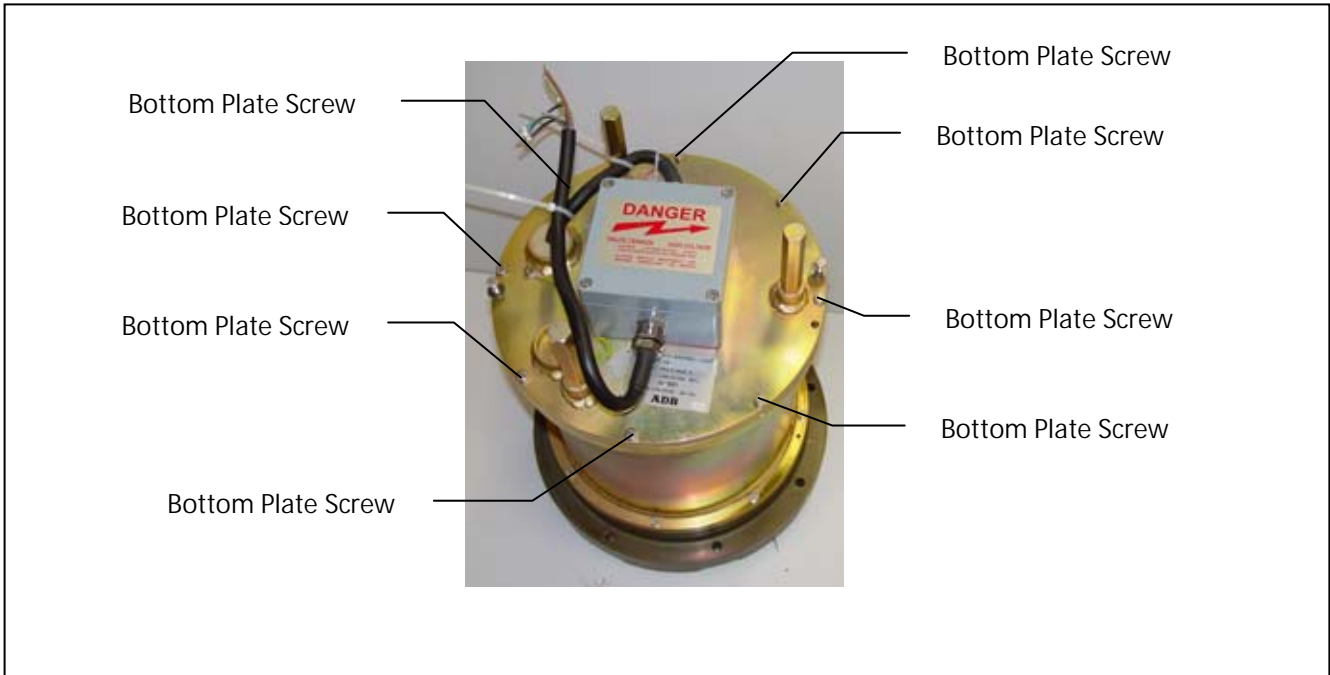


Figure 4-2 Upside Down View of In-pavement Light Fixture

3. See Figure 4-3. Remove the 3 nuts on the reflector assembly.

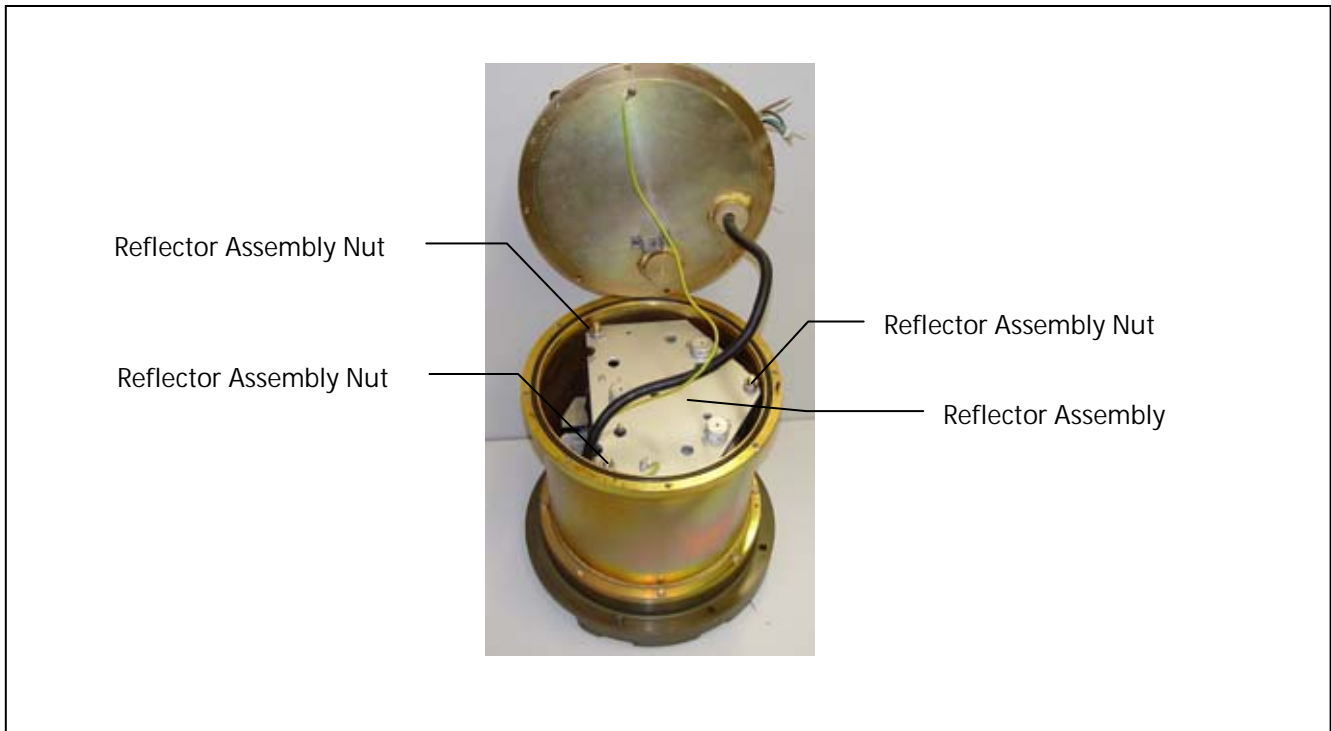


Figure 4-3 Three Nuts on Reflector Assembly

Replacing Lamp (contd.)

- 4. See Figure 4-4. Disconnect the anode and cathode wires, and the triggering wire.

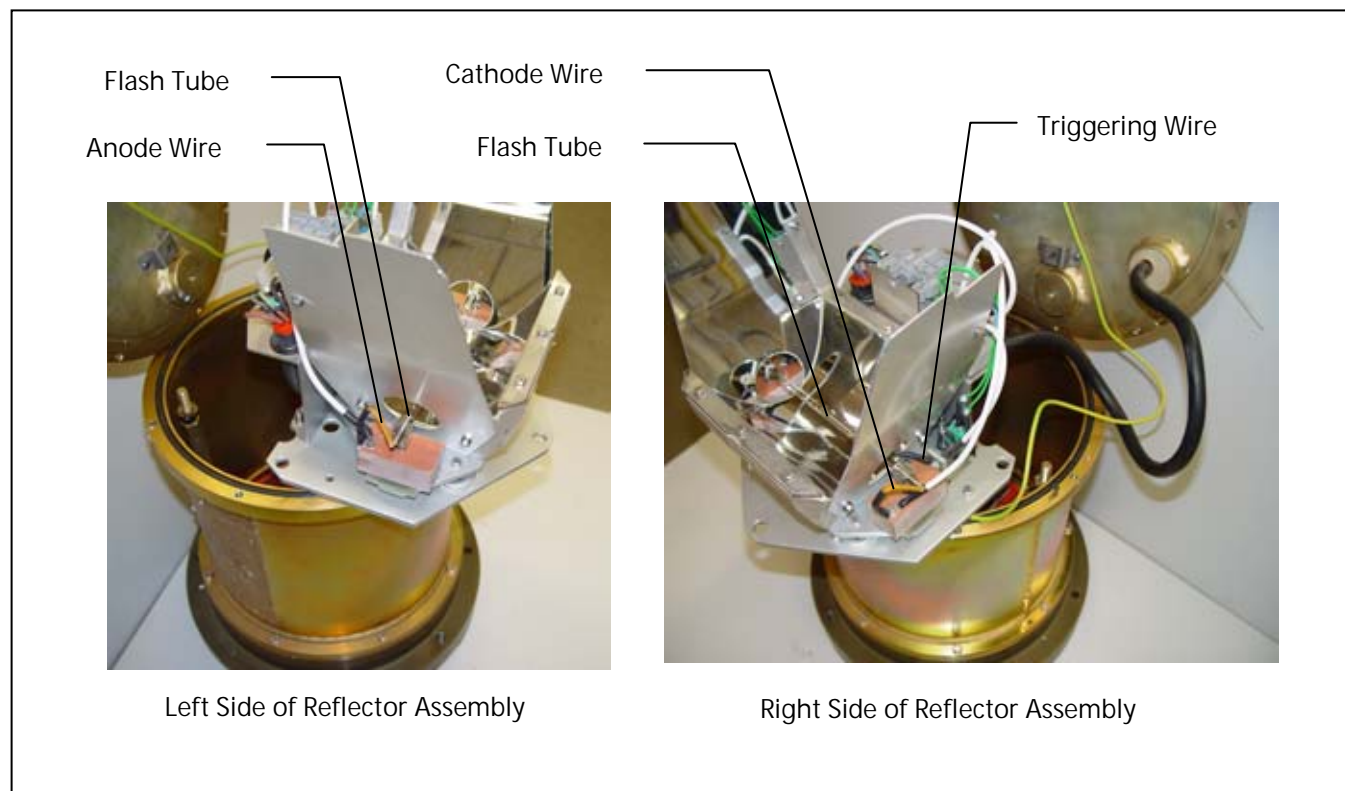


Figure 4-4 Anode, Cathode, and Triggering Wires

Replacing Lamp *(contd.)*

6. Remove the flash tube and replace with a new flash tube.



CAUTION: Never touch the bulb of the lamp with your bare hands. It will reduce the lifetime of the lamp considerably. Should it happen, clean the bulb with alcohol.

NOTE: See Figure 4-5. When installing the new flash tube, the triggering wire on the flash tube must be placed on the opposite side of the window opening so it does not cast a shadow.

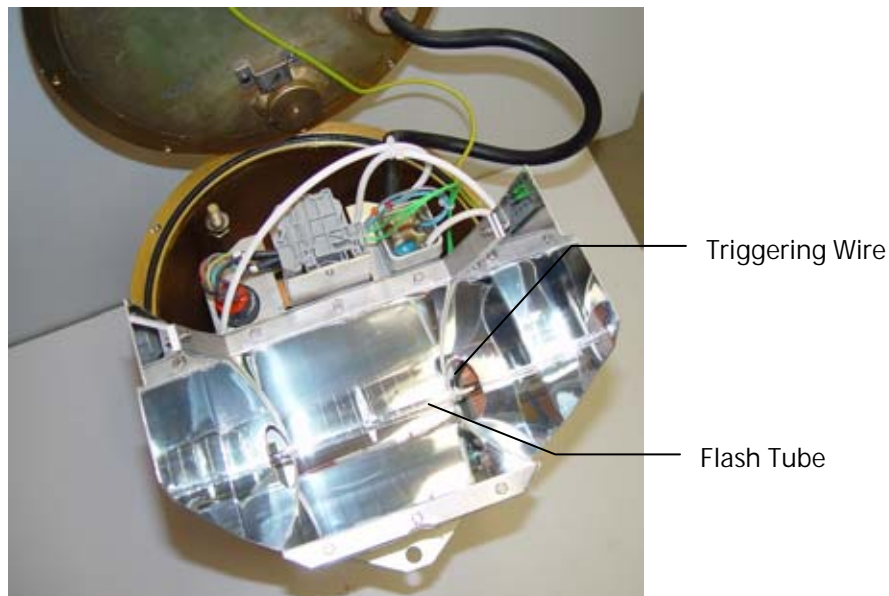


Figure 4-5 Flash Tube with Triggering Wire

Replacing Lamp (*contd.*)

7. See Figure 4-6. Check the O-ring on the light fixture can and replace if necessary. Clean the O-ring groove.

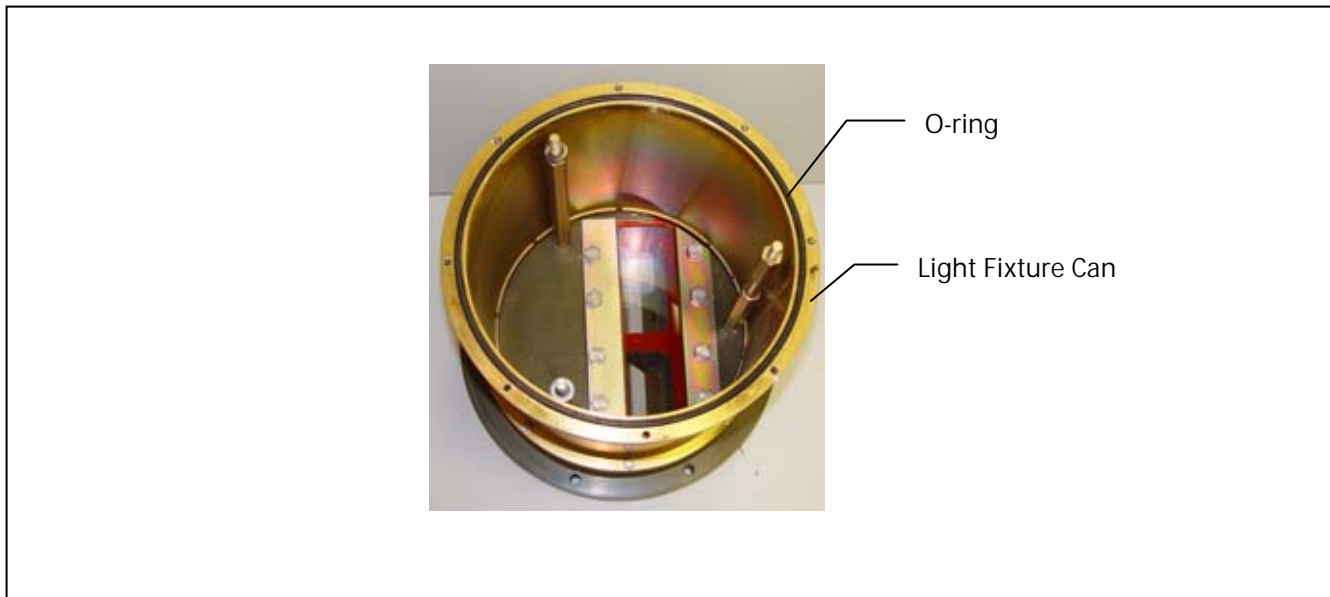


Figure 4-6 O-Ring

8. Install the new optical system in the base of the light fixture.
9. Install the lower cover. Tighten the screws and nuts.
10. Install the light fixture and torque the mounting bolts. Refer to *Torquing Mounting Bolts* in this section.

Cleaning Optical Assembly

Open the light fixture and remove the lamp. See the maintenance schedule in Table 4-1 for cleaning the reflector, mirror, and prism with liquid glass cleaner. Do not scratch and avoid applying too much pressure.

Clean the outer surface of the lens using liquid glass cleaner. If the lens 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 lens with gently, dry, oil-free compressed air at a pressure no greater than 10 psi (69 kNt/m²) to evaporate or remove all remaining cleaner.

Retorquing Mounting Bolts

To retorque outer ring and optical assembly mounting bolts, perform the following procedure:

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

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

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

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

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

NOTE: Always torque the bolts across the corners. See Figure 3-8 for optical assembly mounting bolts. See Figure 2-2 in the *Description* section for outer ring mounting bolts in the *Installation* section. To torque mounting bolts across corners, tighten bolts in noted sequence: #1 and #4, then #2 and #5, then #3 and #6.

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

NOTE: After several re-lampings, threaded holes may accumulate with dirt and excessive Loctite. If this occurs, screws may not seat properly. Clean tapped holes with wire brush or hand tap, then blow off with clean, dry, oil-free low pressure air, or use Loctite Chisel 79040 and spray on threads and allow to soak for 15-30 minutes, depending upon the amount of build-up. Wipe off or blow off with clean, dry, oil-free low pressure air. After the bolt has been retorqued three times, replace with new bolt. If the bolt is continuously loose, inspect tapped thread in the light base flange for damage. If thread is damaged, contact Siemens Airfield Solutions, Inc., Sales Department for field repair inserts kit.

Removing Light Base Water



Turn off the circuit when checking water level.

Check the water level in the light base on a regular schedule. In many cases, it is impractical to keep water out of the base. If water is continuously present, always be sure to remove and inspect the entire light assembly during regular maintenance. If practical, pump water from the base can if more than six inches (152.4 mm) of water in the light base is found. Always cover the light base with the appropriate steel cover plate if the light assembly is removed.



Water entering the light base can become a serious problem, since freezing water can rupture the base.

Lifting Optical Assembly Out of Base

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

1. Remove the six fixing screws and washers or self-locking nuts.

**Lifting Optical Assembly
Out of Base** *(contd.)*

2. See Figure 4-7. Slide a 1/2-inch-diameter rod through the 1/2-13 eyebolts, lift the optical assembly out of the base and place the optical assembly next to the base.



WARNING: The light fixture with can is heavy. Use two people to lift the fixture.

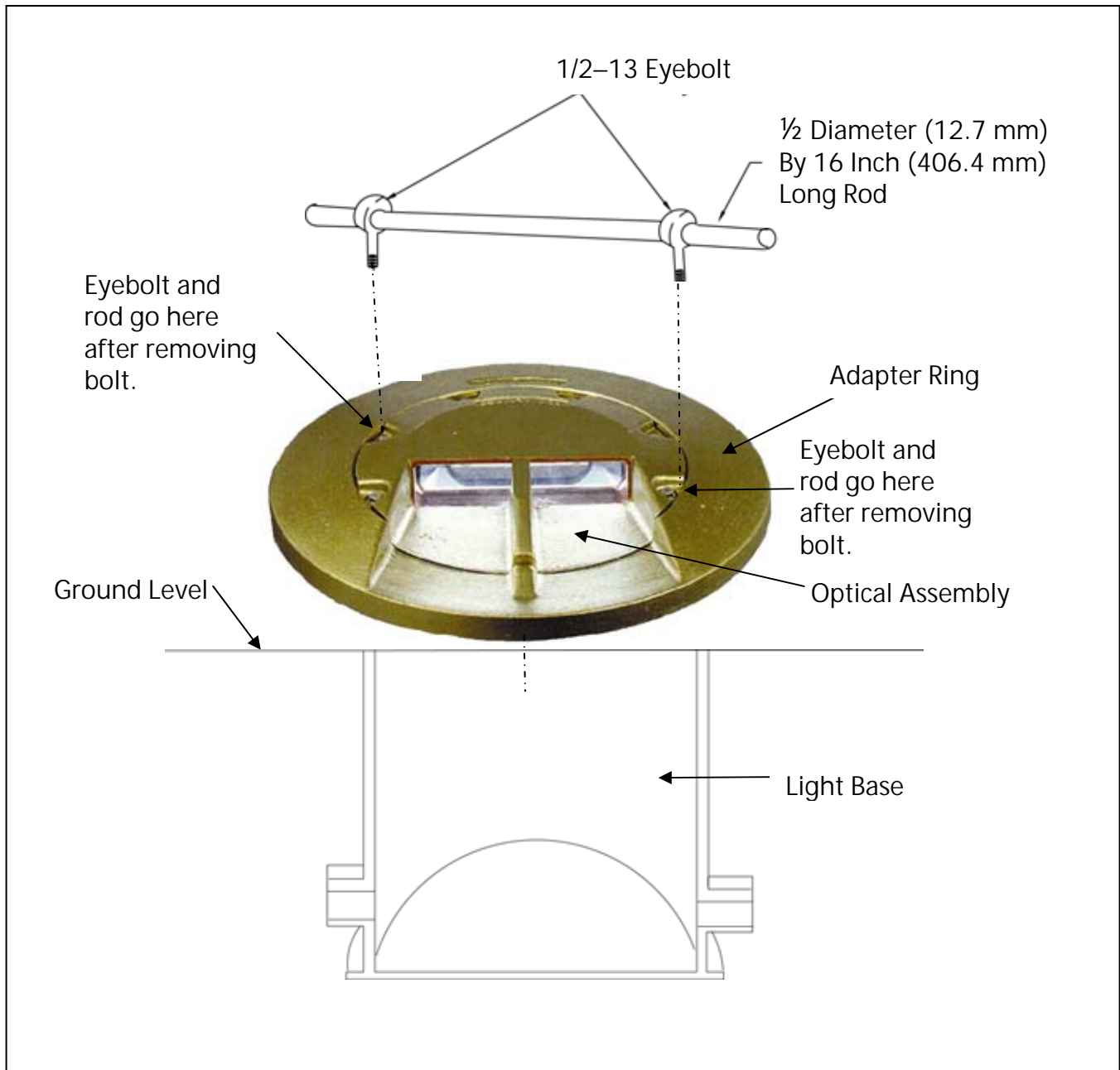


Figure 4-7 Removing Light Fixture from Base

**Lifting Optical Assembly
Out of Base** *(contd.)*

3. Perform required service.

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

4. After service is complete, reinstall the fixture.



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

Section 5

Troubleshooting



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



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

1. Introduction

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

	Problem	Page
1.	Lamp not energizing	5-2
2.	Distorted light beam output	5-2
3.	Water inside optical chamber	5-2
4.	Lamp misfires	5-2

2. Troubleshooting Procedures

Troubleshooting procedures for the in-pavement lights are contained here.

Problem	Possible Cause	Corrective Action
1. Lamp not energizing	Defective lamp Loose or broken contacts Moisture inside assembly causing current leakage	Replace lamp. Refer to <i>Replacing Lamp</i> in the <i>Maintenance</i> section. Tighten or replace. Open up light assembly. Clean, dry, and inspect light assembly. Replace O-ring.
2. Distorted light beam output	Cracked or damaged lens	Replace lens.
3. Water inside optical chamber	Damaged or missing lens seals or top cover O-ring	Replace both lens seals. Replace top cover O-ring.
4. Lamp misfires during initial installation	Trigger signal from ICC not strong enough to reliably activate the flash lamp	Remove the flasher and temporarily sit it adjacent to the ICC. Connect a short length of 6-core cable to the flasher. If the lamp still misfires, see Problem 5 below: <i>Lamp misfires after Initial Installation</i> . If the lamp does not misfire, the trigger signal is not strong enough due to an excessive distance between the ICC and the flasher or the 6-core cable wire gauge is too small. A trigger signal amplification board mounted inside the in-pavement flasher is available. Contact the Siemens Airfield Solutions Sales Department for more information.
5. Lamp misfires after initial installation	Lamp about to fail, trigger transformer failing, or ICC not operating properly	Replace lamp. Refer to <i>Replacing Lamp</i> in the <i>Maintenance</i> section. Replace trigger transformer. Check ICC instruction manual provided by others for ICC troubleshooting procedures.

Section 6

Parts

1. Introduction

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

2. Using the Illustrated Parts List

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

The Part Number column gives the Siemens Airfield Solutions part numbers in numerical order.

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

Item	Description	Part Number	Quantity	Note
1	Assembly	1	A	
2	Part	1		
3	Part or Assembly			
4	Assembly	1		
NOTE A				

The Quantity column contains the quantity required per unit, assembly, or subassembly. The code AR (As Required) is used if the part number is a bulk item ordered in quantities or if the quantity per assembly depends on the product version or model.

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

3. In-pavement Flashing Light Parts List

See Figure 6-1. Refer below for the in-pavement flashing light parts list. The in-pavement flashing light part number is 44A6234-1.

NOTE: The previous part number for the in-pavement flashing light was 1440.02.050.

Item	Description	Part Number	Quantity	Note
1	Ring, cast iron	4070.93.970	1	
2	Screw, #3/8–16 UNC x 7/8, stainless steel	7200.13.813	6	
3	Spring, washer M10, stainless steel	7284.10.464	28	
4	Cover, cast iron	4070.93.960	1	
5	Lens, glass	5050.01.300	1	
6	Prism strip, silicone	4070.97.150	2	
7	Sealant, RTV	7835.55.150	AR	
8	O-ring, 11.984 diameter, rubber	7080.90.390	1	
9	Screw, #3/8–16 UNC x 7/8, stainless steel	7200.23.806	14	
10	O-ring, 10.975 diameter, rubber	7080.90.380	2	
11	Screw, M6 x 25, stainless steel	7100.08.576	6	
12	Spring, washer, M6, stainless steel	7284.10.445	22	
13	Lens holder, left, steel plated	4070.95.390	1	
14	Stud, steel plated	4070.95.360	2	
15	Light base, steel plated	4070.95.140	1	
16	Hex nut, M10, stainless steel	7150.53.300	6	
17	Flat washer, M10, stainless steel	7283.04.710	8	
18	Alignment pin, stainless steel	7275.60.313	1	
19	Inner cover, steel plated	4071.59.120	1	
20	Cable clamp, nylon	6126.22.050	1	
21	Nut for PC, brass	4070.97.130	1	

AR: As required

Continued on next page

3. In-pavement Flashing Light Parts List *(contd.)*

Item	Description	Part Number	Quantity	Note
22	Washer for PC, stainless steel	4070.97.130	1	
23	Packing ring, PG16, rubber	6126.01.301	1	
24	Sealant	7835.55.070	AR	
25	Sealant	7835.45.100	AR	
27	Interlock switch, stainless steel	4070.97.010	1	
28	Screw, M4 x 8, stainless steel	7110.08.358	2	
29	Spring washer, M4, stainless steel	7284.10.416	2	
30	Box for connection, aluminum	4071.57.660	1	
31	Compression gland, brass	6126.01.330	1	
32	Screw, M6 x 16, stainless steel	7110.08.561	4	
33	Pressure release screw, stainless steel	4070.97.040	1	
34	O-ring, silicone	7080.90.016	1	
35	Stud, steel plated	4070.96.531	3	
36	Screw, M6 x 20, stainless steel	7100.08.569	6	
37	Stud, steel plated	4070.95.351	1	
38	Optical system	4070.95.351	1	
40	Lens holder, right, steel plated	4070.95.390	1	
AR: As required				

3. In-pavement Flashing Light Parts List (contd.)

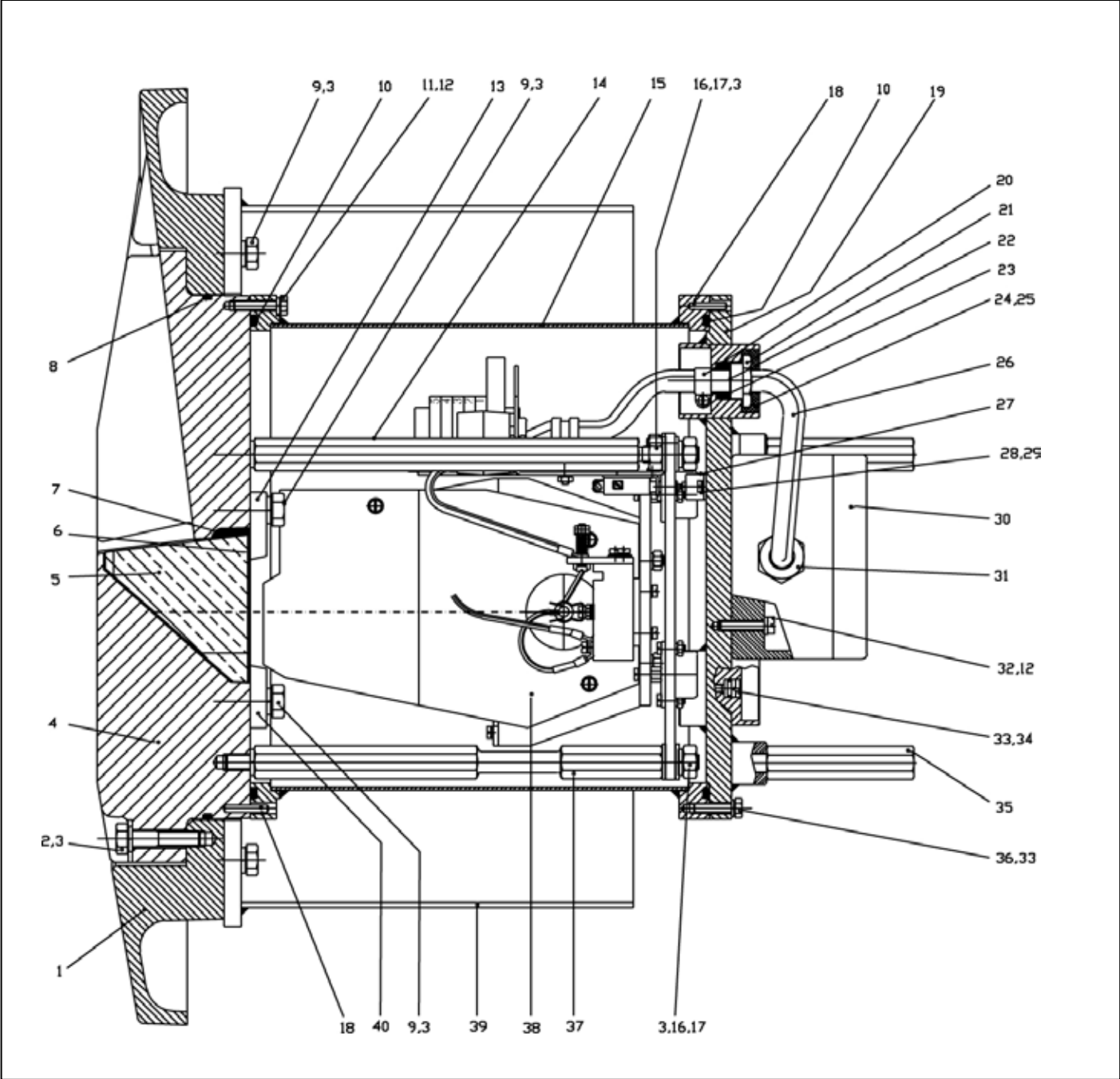


Figure 6-1 In-pavement Flashing Light Assembly

3. In-pavement Optical Assembly Parts List

See Figures 6-2 through 6-4. Refer below for the in-pavement optical assembly parts list. The part number for the optical assembly is 4071.59.180.

Item	Description	Part Number	Quantity	Note
1	Reflector assembly	4070.97.110	1	
2	Reflector clamp, stainless steel	4070.97.120	1	
3	Screw, M4 x 10, stainless steel	7110.08.362	17	
4	Spring washer, M4, stainless steel	7284.10.416	32	
5	Reflector, aluminum, left	4070.95.470	1	
6	Reflector, aluminum, right	4070.95.470	1	
7	Hex nut, M4, stainless steel	7150.53.180	18	
8	Flat washer, M4, stainless steel	7283.04.230	16	
9	Terminal block, support	4071.57.680	1	
10	Blind rivets	7272.90.530	2	
11	End barrier	6112.45.400	2	
12	Terminal block	6112.45.420	5	
13	Marker (1,2,3,4,5)	6112.45.422	5	
14	Terminal block	6112.45.410	1	
15	Marker (HT)	6112.45.412	1	
16	Trigger transformer	1440.02.180	1	
17	Cable clamp	6126.22.050	1	
18	Stud, L 12 x M4 M/F	4060.65.570	1	
19	Interlock switch support, stainless steel	4090.97.050	1	
20	Screw #6-32 UNC ¼, stainless steel	7211.10.601	2	
21	Screw #6-32 UNC ½, stainless steel	7211.10.603	1	
22	Hex nut #6-32, stainless steel	7250.08.011	1	

Continued on next page

3. In-pavement Optical Assembly Parts List *(contd.)*

Item	Description	Part Number	Quantity	Note
23	Interlock switch	6150.90.120	1	
24	Screw M5 x 16, stainless steel	7110.08.561	4	
25	Spring washer, M5, stainless steel	7284.10.426	8	
26	Hex nut, M5, stainless steel	7150.53.200	4	
27	Optical support, aluminum	4070.95.320	1	
28	Main support, aluminum	4070.95.310	1	
29	Screw M4 x 16, stainless steel	7110.08.370	9	
30	Lamp support	4070.97.070	2	
31	Tab (6.3 – diameter 4)	6111.87.090	2	
32	Helicoil M4, stainless steel	7162.08.240	8	
33	Spade connector, A4–2.5	6110.12.005	2	
34	Insulating flexi therm, ¼-in.	6108.75.807	AR	
35	Insulated wire, 16 AWG, 9 kV	6103.93.010	AR	
36	Xenon flashing tube	2990.82.650	1	
37	Lampholder, brass	6130.99.370	2	
38	Screw M4 x 25, stainless steel	7110.08.383	1	
39	Spring D.7 x 16, stainless steel	5000.04.690	1	
40	Connector, H.V., trigger wire	4070.97.090	1	
41	Screw M4 x 20, stainless steel	7110.08.377	2	
42	Screw M5 x 20, stainless steel	7110.08.443	4	
43	Helicoil, M5, stainless steel	7162.08.250	4	
44	Lamp holder	4070.97.080	2	
AR: As required.				
Continued on next page				

3. In-pavement Optical Assembly Parts List *(contd.)*

Item	Description	Part Number	Quantity	Note
45	Grommet	6126.20.565	1	
46	Reflector holder, stainless steel	4070.95.680	1	
47	Shock absorber	7030.00.010	3	
48	End plate for terminal block	6112.45.421	1	
49	End plate for terminal block	6112.45.411	1	

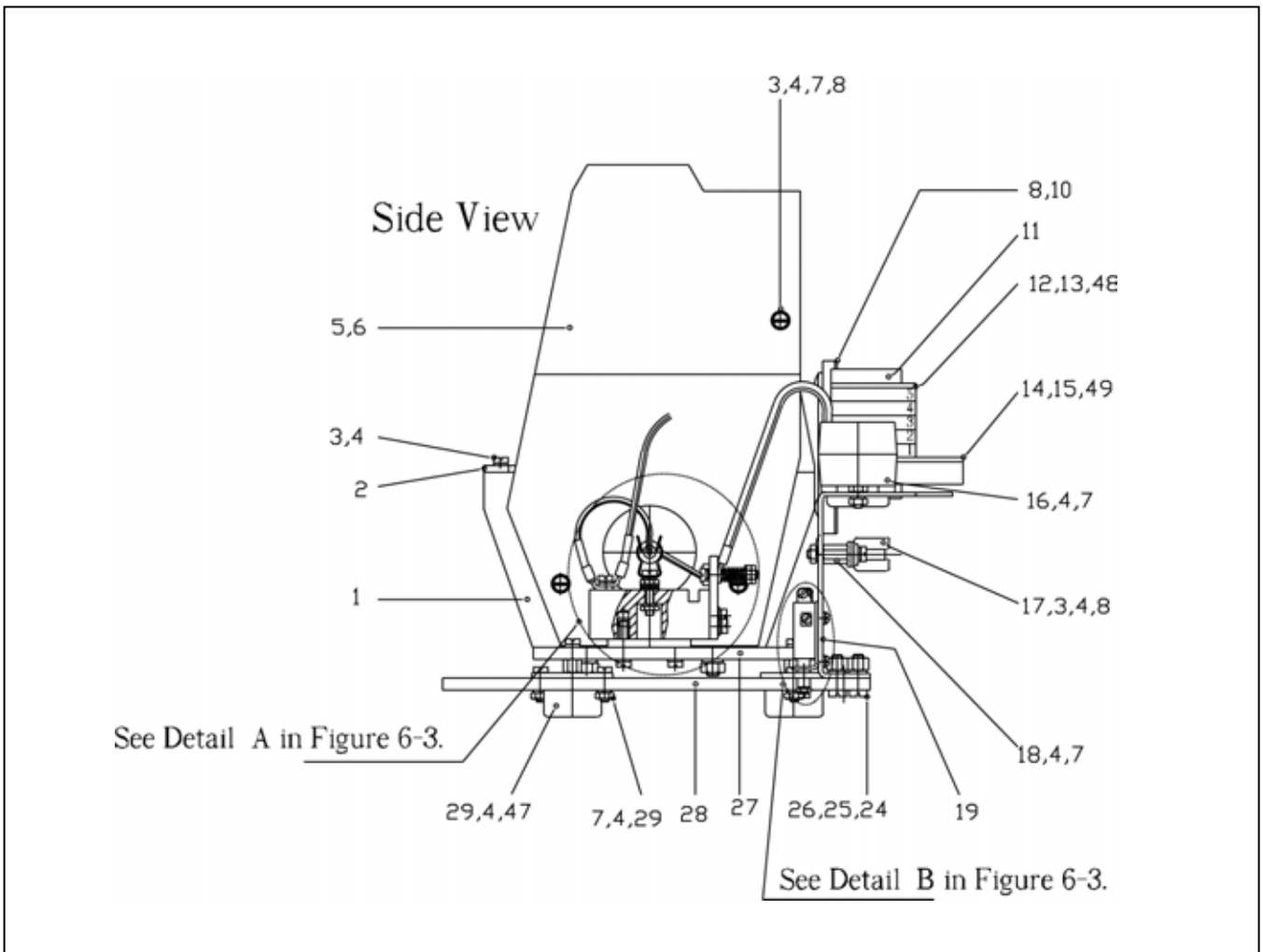


Figure 6-2 In-pavement Flashing Light Optical Assembly (Side View)

3. In-pavement Optical Assembly Parts List (contd.)

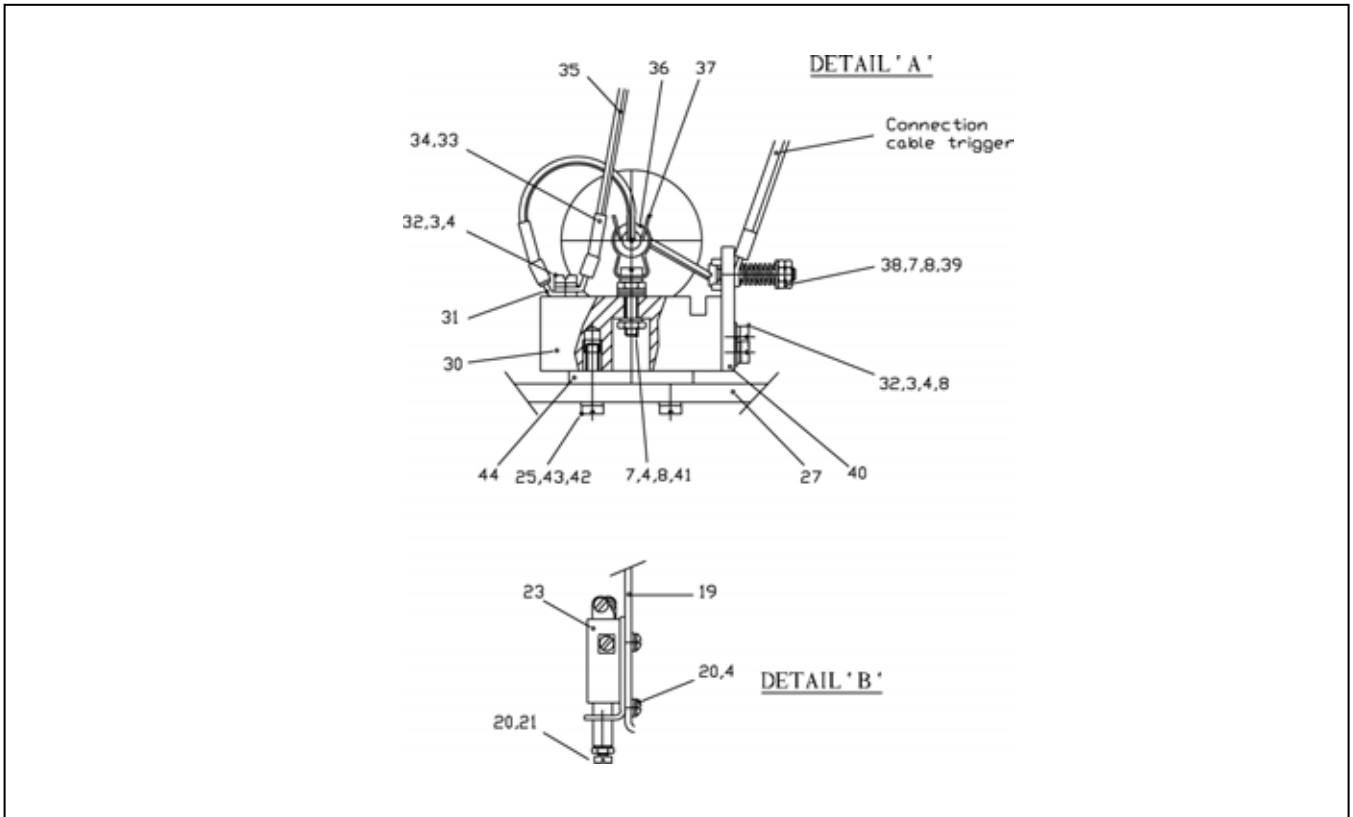


Figure 6-3 In-pavement Flashing Light Optical Assembly (Detail A and Detail B)

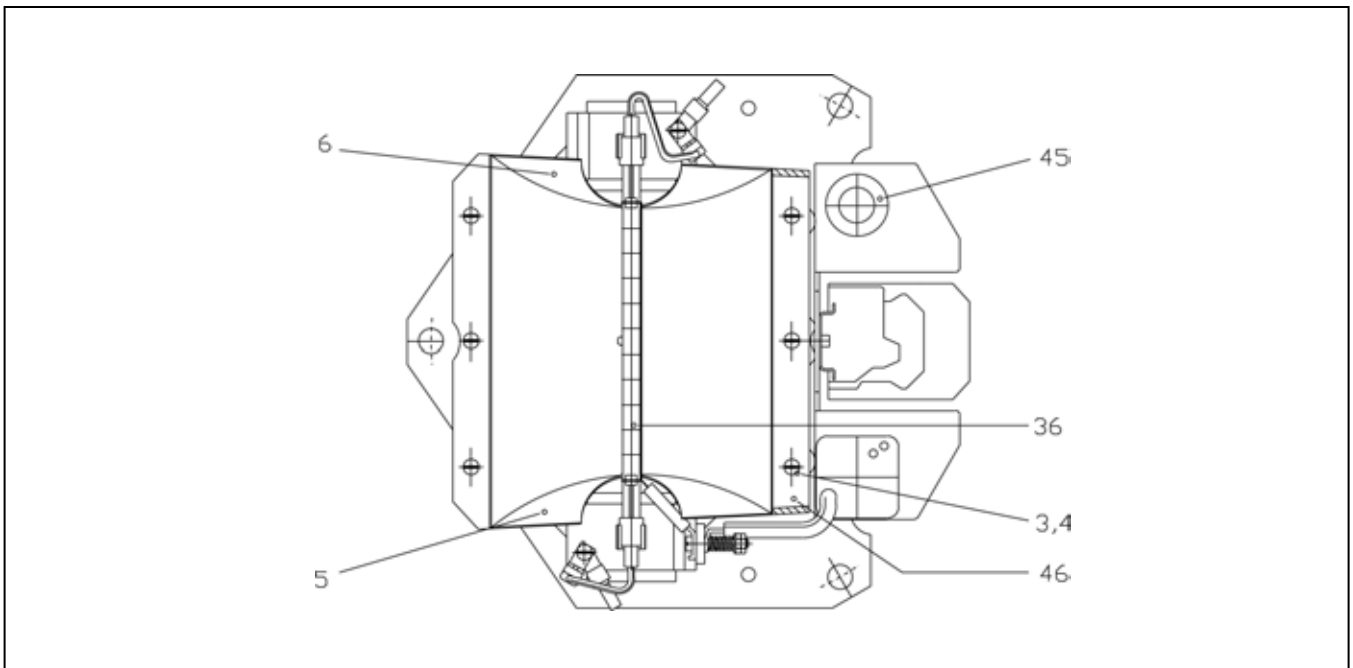


Figure 6-4 In-pavement Flashing Light Optical Assembly (Top View)

4. Optional Parts

See Figure 6-1. Refer below for optional parts.

Item	Description	Part Number	Quantity	Note
26	6-core cable	6104.90.206	AR	A
39	LB-4 deep base		1	B
NS	Connector kit, in-pavement flasher, male plug	70A0618	1	
NS	Connector kit, in-pavement flasher, female receptacle	70A0619	1	

NOTE A: One 6-core cable is needed with each in-pavement flasher. Please specify total length of cable required (in feet) when ordering.
 NOTE B: Contact Siemens Airfield Solutions for part number.
 NS: Not shown
 AR: As required

5. Recommended In-pavement Flasher Spare Parts

This subsection provides recommended in-pavement flasher final assembly and optical assembly spare parts (*ordered separately*).

Recommended In-pavement Flasher Final Assembly Spare Parts

See Figure 6-1. Refer below for recommended in-pavement flasher final assembly spare parts.

Item	Description	Part Number	Note
5	Lens, glass	5050.01.300	
7	Sealant, RTV	7835.55.150	
8	O-ring, 11.984 diameter, rubber	7080.90.390	
10	O-ring, 10.975 diameter, rubber	7080.90.380	

Recommended In-pavement Flasher Optical Assembly Spare Parts

See Figures 6-2 through 6-4. Refer below for recommended in-pavement flasher optical assembly spare parts (*ordered separately*).

Item	Description	Part Number	Note
16	Trigger transformer	1440.02.180	
23	Interlock switch, MS16106-1	6150.90.120	
36	Xenon flashing tube, P4070.97.140.E	2990.82.650	

Section 7

Wiring Schematics

1. Introduction

This section provides wiring schematics for the in-pavement flashing light.

2. Wiring Schematics

See Figure 7-1 for the in-pavement flashing light head with trigger interface wiring.

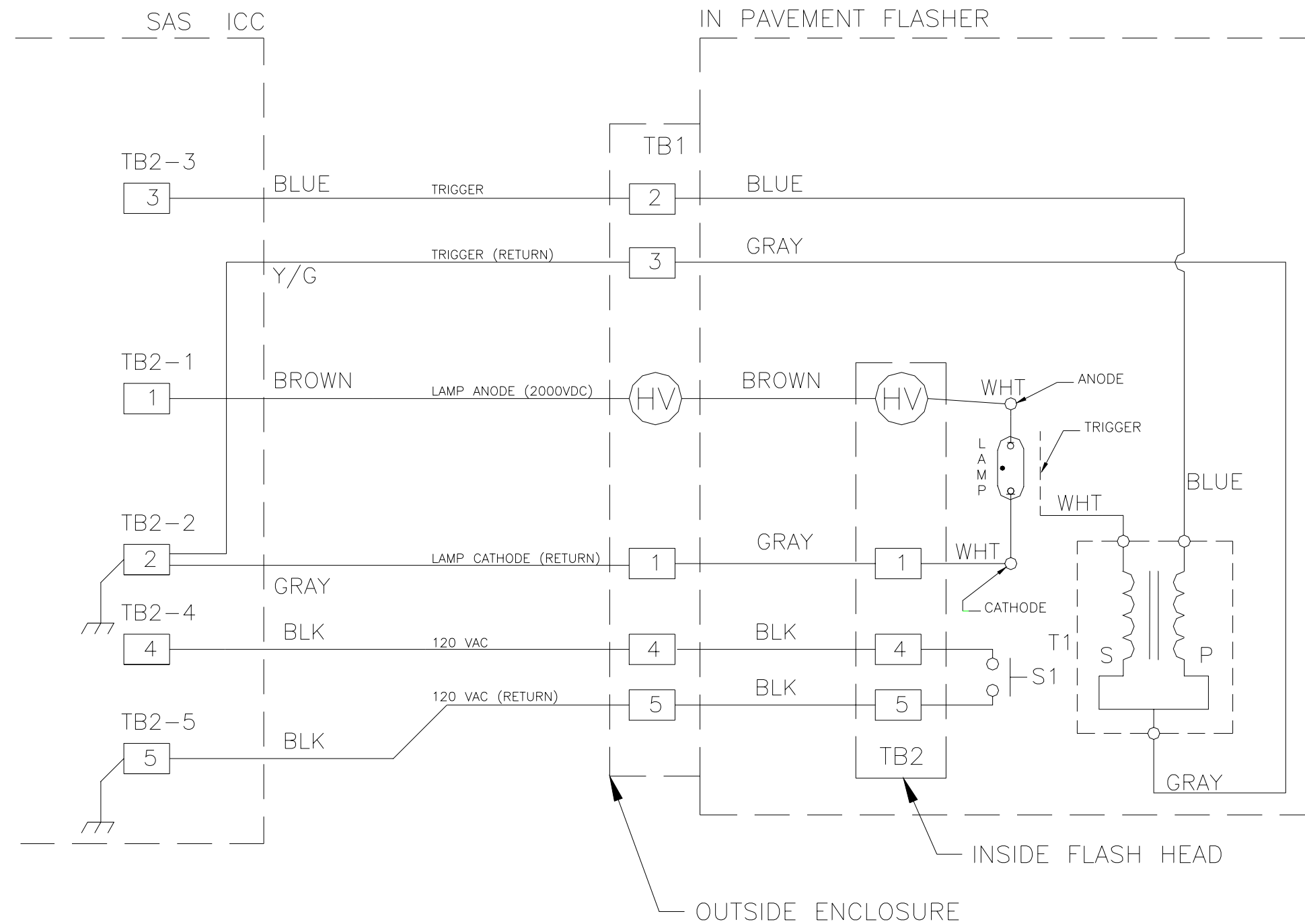


Figure 7-1 In-pavement Flash Head Wiring