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RGL

(RUNWAY GUARD LIGHT)

INSTRUCTION BOOK

Multi Electric Model 6804

Made Per

US DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

AC-150/5345-46

TYPE L-804
MODE 1 & 2

Manufactured By:

OCEM Acquisition, Corp. d.b.a.

MULTI ELECTRIC MFG., INC.

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GUARANTEE

(A) The Contractor guarantees each item against defects in material or workmanship. This Guarantee extends for a period of one year, unless otherwise specified, from the date of installation or use, provided that this period shall not exceed two years from the date of delivery.

(B) Upon notice in writing, the Contractor shall promptly repair or replace all defective or damaged items f.o.b. any point designated by the Government within the 48 contiguous States and the District of Columbia, at no expense to the Government. The Contractor may elect to have any replaced item returned to his plant at his request.

(C) This Guarantee shall exclude lamps and material normally consumed in operation unless excluded item fails as a result of improper application by the Contractor, in which case, the Guarantee shall be equally applicable to these items; provided that the Contractor shall guarantee excluded items to the extent of the guarantee received by the Contractor from his supplier.

(D) If 20 percent or more of the total quantity for any part or component to which this Guarantee applies, but not less than two of any such part, or component furnished under the contract, fail in normal service, the fact shall be conclusive evidence that the particular part or component or the item or part design, is unsuitable for the purpose intended. The Contractor, upon written notice of this fact, shall replace or correct the design of all quantities of the item or part in a manner satisfactory to the Government, unless the use of such part, component or design was specifically required by the Government.

(E) The guarantee period shall exclude any period of time the unit or part fails to perform satisfactorily due to defects.

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1.0 PURPOSE

This document is the instruction book for the installation and maintenance of the Multi Electric Mfg., Inc Model 6804 Runway Guard Light (RGL). The RGL is manufactured to Federal Aviation Administration (FAA) Advisory Circular AC 150/5345-46 as an L804 Mode 1 or Mode 2 fixture and to ICAO annex 14 recommendations.

Runway Guard Light – Part Numbers Index

Runway Guard Light 6 8 0 4 - X - X X - X - X

Mode:
- 1 – Series Circuit 6.6A 50/60Hz
- 2 – 120V AC 50/60 Hz
- 3 – 220-240 V AC 50/60 Hz

Lens:
- YY – FAA Yellow
- RR – Red (Not FAA)
- IY – ICAO Yellow

Photocell:
- 1 – With Photocell
- 2 – Without Photocell

Monitor:
- 1 – Monitored
- 2 – Without Monitor

1.1 Application

The typical RGL consists of two alternately illuminated, unidirectional yellow light sources. These light sources are circular, 8 inches in diameter and in the same horizontal plane. They are spaced 15 inches center-to-center. The light sources alternately illuminate at a rate of 45-50 flashes per minute, per source, over all brightness levels. This alternating illumination produces a conspicuous WIG-WAG lighting effect to gain the attention of the pilot and warn of the approach to an active runway. For maximum effect, an RGL should be located on both sides to the taxiway.

1.2 Fault Monitoring

The Standard Multi Electric RGL includes a fault monitor to independently monitor and detect Lamp, Power and Flasher Controller Failure. An OPEN dry set of relay contacts are provided for alarm indicator.

2.0 MODES OF OPERATION

The RGL described by this Instruction book includes the Mode 1- powered from a Constant Current Series Circuit, and Mode 2 - Voltage Powered Circuit.

2.1 Mode 1 Power Source Requirements

The Mode 1 operation of the RGL, will work with a three-step regulator on a 6.6A series circuit with a 200 Watt 6.6 A to 6.6 A Isolation Transformer, or a three-step 20A series circuit with a 200 Watt 20A to 6.6A Isolation Transformer. A 5-step regulator may be used, but may result in false triggers of the alarm monitor and early failure of lamps. The 5 step regulator is not recommended by FAA specifications and standards.

2.2 Mode 2 Power Source Requirements

The Mode 2 operation can be configured to operate from a 110V, 120V, 220V, 230V or 240V 50Hz or 60Hz power source. The Mode 2 system utilizes an external photocell to select day (high intensity), or night (low intensity) light output.

2.3 Alarm Function

The mode 1 and mode 2 RGL includes alarm monitoring for lamps out, flasher failure and input power failure. The alarm monitoring is independent of the RGL timer and power switching circuitry. The alarm signaling is provided by dry-relay contact. An option is available for the contacts to close under the alarm condition, or open under the alarm condition. The unit is shipped from the factory with contact closed alarm pre-wired.

3.0 INSTALLATION & LOCATION

The runway guard light discussed in this manual, is an elevated fixture intended to be located on a taxiway at the entrance, or crossing point of a runway. Elevated and in-pavement runway guard lights (RGLs), serve the same purpose, and are generally not both installed at the same runway holding position. However, if snow could obscure in-pavement RGLs or there is an acute angle between the holding position and the direction of approach to the holding position, it may be advantageous to supplement in-pavement RGLs with elevated RGLs. Each elevated RGL fixture consists of two alternately illuminated, unidirectional yellow lights. In-pavement RGLs, consist of a row of alternately illuminated unidirectional yellow lights. Refer to AC 120-57 *Surface Movement Guidance and Control Systems,* for criteria on the application of RGLs below 1,200 feet (365 m) RVR.

3.1 Location of Elevated Runway Guard Lights

Elevated RGLs are collocated with the runway holding position marking and are normally installed on each side of the taxiway. Generally, elevated runway guard lights should be located as close as practical to the taxiway edge, to maximize their conspicuity. The distance from the defined taxiway edge to the near side of an installed light fixture, should be 10 to 17 feet (3 to 5 m). In order to avoid undesirable spots, the RGL may be moved up to 10 feet (3 m) farther from the runway, but may not be moved toward the runway. If a stop bar is installed at the runway holding position, the elevated RGL should be located at least 3 feet, 6 inches (1 m) outboard of the elevated stop bar light. The RGL should not be located so as to interfere with the readability of the runway holding position sign.

3.2 Light Beam Orientation for Elevated Runway Guard Lights

RGLs should be oriented to maximize the visibility of the light fixtures by the pilots of aircraft approaching the runway holding position. In general, the orientation should be specified by the design engineer to aim the center of the light beam toward the aircraft cockpit, when the aircraft is between 150 feet (45 m) and 200 feet (60 m) from the holding position, along the predominant taxi path to the holding position. The vertical aiming angle should be set between 5 degrees and 10 degrees above the horizontal. The designer should specify aiming of the lights such that the steady burning intensity at all viewing positions between 150 feet (45 m) and 200 feet (60 m) from the holding position is at least 300 cd when operated at the highest intensity step. (Refer to AC 150/5345-46, *Specification for Runway and Taxiway Light Fixtures*, for specifications for the light intensity and beam spread of the L-804 RGL fixture.) If these criteria cannot be met for all taxi paths to the holding position, consideration should be given to the use of multiple fixtures aimed to adequately cover the different taxi paths, the use of in-pavement fixtures to increase the viewing coverage, or aiming the single fixtures on each side of the holding position to optimize the illumination of the predominant taxi path.

3.3 Runway Guard Light System

3.3.1 Power Supply

Elevated RGLs are available as constant current fixtures (Mode 1) or constant voltage fixtures (Mode 2). (See AC 150/5345-46 for further information on the modes.) If Mode 1 elevated RGLs are selected, they should be installed along with any In-pavement RGLs on the same dedicated series circuit wherever possible. If Mode 2 elevated RGLs are selected, they should be installed on a dedicated 120 Volt AC or 240 Volt AC (other options are available) circuit, and any in-pavement RGLs should be installed on their own series circuit. This provides for independent on/off control for operation during daytime visual meteorological conditions (VMC), if desired, and to allow the RGLs to be turned off when the runway is closed. Furthermore, RGLs often need to be operated at a different intensity setting from that of runway or taxiway edge lights. Dedicated series RGL circuits should be powered from an appropriately sized L-828 or L-829, Class 1, Style 1 (3-step) constant current regulator. Brightness control for series circuits is achieved by varying the output current of the constant current regulator. Brightness control for Mode 2 elevated RGLs is achieved by a photocell for each fixture.

> **NOTE:** Consult with constant current regulator manufacturers to determine the suitability of specific regulators to power flashing lights.

3.3.2 Series Circuit Powered Mode 1 RGLs

Where a small number of elevated RGLs are to be installed on an airport, it may be more economical to tap into a nearby circuit than to install a dedicated circuit. However, if the RGLs are intended to be operated during the day for runway incursion prevention purposes, it is not recommended to tap into a nearby circuit because of the increased operating costs of operating the circuit 24-hours a day. Furthermore, a partial circuit load consisting of either elevated or in-pavement RGLs, may cause unwanted pulsing of the steady burning lights on the circuit. This effect, if present, will vary with the actual load and type of constant current regulator. It is generally not recommended to install Mode 1 RGLs on a circuit powered from a 5-step constant current regulator, where all 5 steps are available. Elevated RGLs may appear extremely dim when operated on step 1 or 2.

3.3.3 Constant Voltage Circuits for Elevated RGLs

It is important that the voltage provided to elevated RGLs be within the tolerances specified. The airfield designer should verify the voltage drop of the circuit and make any special provisions necessary to obtain adequate operating voltage at the RGL.

3.4 Elevated RGL Electrical Connections

If elevated RGLs will not be monitored, they may be ordered with a two-conductor lead, which terminates with a 2-pin L823 plug. The 2-pin plug mates with the secondary lead

of 200W isolation transformer. If the elevated RGLs will be monitored, they are supplied with a five-conductor lead, and mating harness (see figure 4.1). The five-conductor lead (2 power, 2 monitoring, 1 case ground) terminates with a 5-pin plug. The mating 5-socket receptacle is provided with an L823 plug for connection to the secondary of the 200W Isolation transformer. The 2 alarm connections and ground, are free to connect as local requirements dictate. The alarm connection is shipped wired as normally (non-alarm), open relay contacts. The installer may change the alarm connection to a supervised normally (non-alarm), closed relay contact.

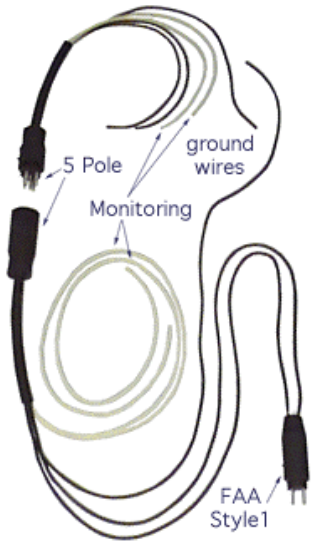
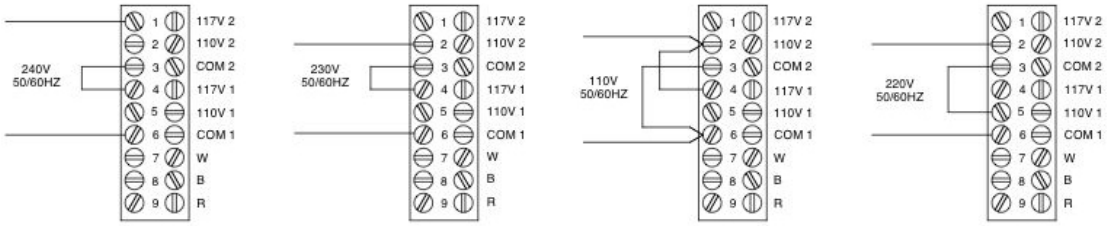


Figure 4.1 RGL wiring Harness with monitoring

3.4.1 Power Connections

The RGL can operate from either the series circuit or from a voltage source. When operated from a voltage source, connections are made to the terminal block located in front of the power transformer. The input voltage is pre-wired for 120VAC operation (Line on terminal 1, Neutral on terminal 6, Jumper between 6 & 3, and Jumper between 4 and 1). Alternative input voltages can be used by wiring the terminal block as shown below:



ALTERNATE INPUT VOLTAGE

3.4.2 Configuring the Alarm

The multi electric RGL, is shipped with the alarm circuit configured for an open dry relay contact for the non-alarm state, and a closed contact for the alarm state. The alarm

configuration is selected by the termination of the alarm connections to the controller board. The terminal black TB1 on the controller circuit card assembly, is pre-configured from the factory with the common alarm connections on TB1-2, and the alarm out to TB1-3. The connection at TB1-3 can be moved to TB1-1 to provide a monitored alarm (Alarm Open Contact) mode of operation.

3.4.3 Photocell Connections

A photocell is used with the mode 2 RGL to switch between day and night operations. The photocell and input power are connected to the terminal block 1A1TB1 mounted in front of the power transformer. The photocell is a three wire device and is connected to TB1-7 Neutral (white), TB1-8 120Vac (black), and TB1-9 Control (red). The installer will be required to make a hole in the L804, in order to facilitate entrance of the wiring harness for the photocell. The photocell must have an unobstructed northern view and not directly illuminated by moving aircraft, vehicles or stationary lighting. The photocell should be mounted to the yoke bracket, on the side of the RGL when practical. Other mounting provisions may need to be provided depending on site conditions.

4.0 STANDARDS AND TOLERANCES

The runway guard lights have the following operating standards and tolerances used to determine and restore proper operation during routine and corrective maintenance.

4.1 RGL Mode 1 Standards and Tolerances

The following standards and tolerances are for a series circuit powered Mode 1 RGL.

Mode 1 Parameter	Initial Nominal	Tol.	Operating Nominal	Tol.	Ref.
Input Power: (Amps)					
Step 1	4.8A	4.66A 4.94A	4.8A	4.66A 4.94A	5.1.1
Step 2	5.5A	5.33A 5.67A	5.5A	5.33A 5.67A	5.1.2
Step 3	6.6A	6.40A 6.70A	6.6A	6.40A 6.70A	5.1.3
Flash Rate: Alternately Illuminating Lamps. (Rate is per lamp per minute)	50 per Min.	45 55	50 per Min	45 55	5.3.1

Alarm Conditions:	Normal Configuration Relay Contacts		Supv. Configuration Relay Contacts		Ref.
Standard Configuration:					
Lamp Failure	Closed		Open		5.3.2.1
Power Removed	Closed		Open		5.3.2.2
Flasher Failure	Closed		Open		5.3.2.3
No Fault	Open		Closed		5.3.2.4.

4.2 RGL Mode 2 Standards and Tolerances

The following standards and tolerances are for the Mode 2 voltage powered RGL.

Mode 2 Parameter	Initial Nominal	Tol.	Operating Nominal	Tol.	Ref.
Input Power: (Volts)					
110VAC	110 VAC	102V 115V	110VAC	102V 115V	5.2.1.1
120VAC	120VAC	116V 130V	120VAC	116V 130V	5.2.1.2
220VAC	220VAC	208V 228V	220VAC	208V 228V	5.2.1.3
230VAC	230VAC	226V 238V	230VAC	226V 238V	5.2.1.4
240VAC	240VAC	236V 260V	240VAC	236V 260V	5.2.1.5
Flash Rate: Alternately Illuminating Lamps. (Rate is per lamp per minute)	50 per Minute	45 55	50 per Minute	45 55	5.3.1
Light Intensity Change (Photocell)					
Day Ambient To Night Ambient	45 Seconds	30 Sec. 70 Sec.	Same as Initial		5.2.2

Alarm Conditions:	Normal Configuration Relay Contacts		Supv. Configuration Relay Contacts		Ref.
Standard Configuration:					
Lamp Failure	Closed		Open		5.3.2.1
Power Removed	Closed		Open		5.3.2.2
Flasher Failure	Closed		Open		5.3.2.3
No Fault	Open		Closed		5.3.2.4.

5.0 MAINTENANCE

The following procedures should be used to determine if the Runway Guard Light system is functioning properly. These procedures are broken down to Mode 1 RGL specific, Mode 2 RGL specific, and Common RGL procedures.

Caution

Use appropriate caution when making live circuit measurements on all equipment. Power should be removed whenever live measurements are not being made.

Note

All maintenance should be performed by qualified personnel only.

5.1 Mode 1 Specific Maintenance Procedures

The following procedures are used for the mode 1 series circuit powered Runway Guard Light periodic maintenance.

5.1.1 Input Power Step 1

Place the CCR powering the circuit for the RGL to the Step 1 position. Measure the current supplied to the controller with a current probe. The current should be within the operating tolerances shown in section 4. Adjust the regulator output according to the Regulator Manufacturer's procedures.

5.1.2 Input Power Step 2

Place the CCR powering the circuit for the RGL to the Step 2 position. Measure the current supplied to the controller with a current probe. The current should be within the operating tolerances shown in section 4. Adjust the regulator output according to the Regulator Manufacturer's procedures.

5.1.3 Input Power Step 3

Place the CCR powering the circuit for the RGL to the Step 3 position. Measure the current supplied to the controller with a current probe. The current should be within the operating tolerances shown in section 4. Adjust the regulator output according to the Regulator Manufacturer's procedures.

5.2 Mode 2 Specific Maintenance Procedures

The following maintenance procedures are specific to the mode 2 RGL.

5.2.1 Input Power

Determine the connected operating voltage for the RGL and use the appropriate procedure below in order to measure the operating voltage to the fixture. All measurement s should be made with a true RMS voltmeter with sufficient accuracy.

5.2.1.1 Input Power 110VAC

Connect the voltmeter probes between TB1-2 and TB1-6. Measure the input voltage and compare it to the operating tolerances for the RGL, located in section 4 for the proper input voltage. Correct any external wiring problems as needed to bring the input voltage to with in operating tolerance. If the system cannot be brought back into tolerance rewire the input voltage according to the installation procedures in 8.2.2.3.

5.2.1.2 Input Power 120VAC

Connect the voltmeter probes between TB1-1 and TB1-6. Measure the input voltage and compare it to the operating tolerances for the RGL, located in section 4 for the proper input voltage. Correct any external wiring problems as needed to bring the input voltage to with in operating tolerance. If the system cannot be brought back into tolerance rewire the input voltage according to the installation procedures in 8.2.2.3.

5.2.1.3 Input Power 220VAC

Connect the voltmeter probes between TB1-2 and TB1-6. Measure the input voltage and compare it to the operating tolerances for the RGL, located in section 4 for the proper input voltage. Correct any external wiring problems as needed to bring the input voltage to with in operating tolerance. If the system cannot be brought back into tolerance rewire the input voltage according to the installation procedures in 8.2.2.3.

5.2.1.4 Input Power 230VAC

Connect the voltmeter probes between TB1-2 and TB1-5. Measure the input voltage and compare it to the operating tolerances for the RGL, located in section 4 for the proper input voltage. Correct any external wiring problems as needed to bring the input voltage to with in operating tolerance. If the system cannot be brought back into tolerance rewire the input voltage according to the installation procedures in 8.2.2.3.

5.2.1.5 Input Power 240VAC

Connect the voltmeter probes between TB1-1 and TB1-6. Measure the input voltage and compare it to the operating tolerances for the RGL, located in section 4 for the proper input voltage. Correct any external wiring problems as needed to bring the input voltage to with in operating tolerance. If the system cannot be brought back into tolerance rewire the input voltage according to the installation procedures in 8.2.2.3.

5.2.2 Photocell Light Intensity Change

This procedure assumes day time conditions when making the measurements. Cover the window on the photocell and using a stopwatch or other chronograph style instrument

measure the time it takes for the light level to change to the subdued state. Uncover the photocell measure the time it takes for the system to return to the day intensities. If the readings are being made during subdued or night ambient conditions you may have to supply artificial light in order to simulate the day time lighting condition.

5.3 Common RGL Maintenance Procedures

The following procedures are common to both the mode 1 and mode 2 RGL.

5.3.1 Flash Rate

To test the flash rate use a stop watch or other chronograph style instrument to count the number of flashes each lamp presents in one minute. Refer to section 4 for the standards and tolerances.

5.3.2 Monitor Alarms

The following procedures are used for the monitoring system if required. These procedures may not be required for installation without monitoring. The technician must determine if the monitor has a supervised alarm or unsupervised alarm. Refer to the Standards and Tolerances Section 4 of this manual, to identify the alarm state. If the alarm is connected to remote monitor or display system, the alarm condition can be monitored at that location. The alarm wires maybe removed from the terminal block TB1-8, -7 or -9, and a continuity tester used to monitor the relay contacts.

5.3.2.1 Lamp Failure Alarm

To test the Lamp Failure, remove one lead of the lamp from the wiring harness. An alarm should be detected according to the table in Section 4, Standards and Tolerances within 1 minute. Replacing the lamp should clear the alarm within 1 minute.

5.3.2.2 Power Failure Alarm

To test the power failure alarm remove, power from the system. An alarm should be detected according to the table in Section 4 Standards and Tolerances within 1 minute. Returning power to the RGL should clear the alarm with in 1 minute.

5.3.2.3 Flasher Failure Alarm

Mode 1 Flasher Failure Test

To test the Mode 1 Flasher Failure, remove power from the system. Disconnect the fast-on terminals at P7 and P8. Place a jumper wire from P7 to P8. An alarm should be detected according to the table in Section 4, Standards and Tolerances with in 1 minute. Remove power from the system, and replace the connections to P7 & P8, and reapply power to the RGL. This should clear the alarm within 1 minute.

Mode 2 Flasher Failure Test

To test the Mode 2 Flasher Failure, remove the Jumper between JP1-1 and JP1-2, to JP1-2 to JP1-3. An alarm should be detected according to the table in Section 4, Standards and Tolerances within 1 minute. Replace the jumper to JP1-1 and JP1-2. This should clear the alarm within 1 minute.

5.3.2.4 No Fault

An alarm should not be detected (refer to the table in Section 4 Standards and Tolerances) when no faults are present or when a fault is removed.

6.0 RENEWAL AND TROUBLESHOOTING

6.1 Lamp Replacement

To re-lamp the RGL, remove power from the system and loosen the three self retaining fasteners from the top front face panel of the RGL. Tilt the front panel down, to rest on the lanyard inside the RGL. Disconnect the leads leading to the lamp being replaced. Remove the lamp retaining screw on the rear of the reflector. Remove and replace the lamp. Attach the retaining screw to secure the lamp to the lamp holder, on the rear of the reflector. Reattach the lamp leads. If this completes the maintenance required lift the front face back into place and tighten the three self-retaining fasteners. Perform the periodic checks in Section 5, to insure proper function.

6.2 Lens Replacement

Should replacement of the front lens be required, loosen the three self-retaining fasteners from the top front face of the RGL. Tilt the front panel down to rest on the lanyard inside the RGL. Disconnect the leads leading to the lamps. Remove the three fasteners holding the reflector assembly to the front panel. Loosen the lens retainer clips and remove the lens. Replace the lens and reinstate the lens clips. Clean and inspect the inside surface of the reflector with a soft clean cloth (replace if necessary due to scratches or discoloration that may have occurred). Re-attach the reflector assembly by refastening the hardware at the bottom flange. Replace the lamp if required following the procedure in paragraph 6.1. Reattach the lamp leads. If this completes the maintenance required lift the front face back into place and tighten the three self-retaining fasteners. Perform the periodic checks in Section 5, to insure proper function.

6.3 Photocell Replacement

The photocell is mounted to a twist lock socket. Grasp the photocell and twist it counter clockwise (as viewed from the top). Lift the old photocell from the socket. Place the new photocell in the socket, and twist is clockwise until locked in position. Check to make sure the window opening is pointing north and away from stray interfering light sources. Loosen the mounting bracket and re-aim the photocell if required. Perform the periodic checks in Section 5, to insure proper function.

6.4 Controller Replacement

To replace a failed or suspected failed controller card remove all power from the system. Loosen the three self-retaining fasteners from the top front face of the RGL. Tilt the front panel down, to rest on the lanyard inside the RGL. Disconnect the leads attached to the circuit card assembly, located on the center web patrician wall. Remove the four screws holding the circuit card assembly and heatsink plate. Remove and replace the circuit card. Reattach the four screws to mount the circuit card to the center patrician. Reattach the leads removed previously. . If this completes the maintenance required lift the front face back into place and tighten the three self-retaining fasteners. Perform the periodic checks in Section 5, to insure proper function.

6.5 Aiming and Alignment

Refer to the installation criteria for the location that the RGL is installed at. Check the yoke base for level using a standard torpedo level, by placing the level on the top horizontal surface of the yoke. Shims may be required under the base plate to level the yoke. Next check that the horizontal index pin is located in the proper indexing hole location. Make sure the two fasteners on the yoke are tight. Check the vertical index plate on the side of the RGL, to ensure the indexing screw is in the proper elevation index. Check the side mounting screws are snuggly fastened. Make any adjustments as required.

6.6 General Cleaning and Maintenance

Remove power from the system prior to servicing. Using a clean dry cloth, wipe the outside surfaces of the RGL, to remove any dirt or debris that may enter the unit if opened. Loosen the three self-retaining fasteners from the top front face of the RGL. Tilt the front panel down, to rest on the lanyard inside the RGL. Wipe the inside surfaces with a clean dry cloth, to remove any dirt or debris. If excessive dust or dirt is present inside the unit, remove the reflector assembly by removing the lamp leads, and three fasteners holding the reflector to the front panel. Wipe the inside of the reflector and rear lens surface clean, with a clean dry cloth. Replace the reflector assemblies and re-connect the lamps. If this completes the maintenance required, lift the front face back into place and tighten the three self-retaining fasteners. Perform the periodic checks in Section 5 to insure proper function.

7.0 PARTS LIST

The following parts may be used to repair or renew the Runway Guard Lights. Contact Multi Electric Mfg., Inc. sales office or authorized sales representative. The Multi Electric Mfg., Inc. sales office may be contacted by email: sales@multielectric.com or a complete list of our sales representatives at http://www.multielectric.com.

Part Number	Description	Used On
6804-14	Lens, Runway Guard Light	All
6804-15	Lampholder & Reflector Assembly - RGL	All
6804-18	Front Panel Assembly - RGL	All
6804-20	Gasket, Lens - RGL	All
6804-22	Enclosure Assembly, Runway Guard Light	All
6804-30	Lamp, 100W, 6.6A - RGL	All
6804-35	Frangible Coupling, Runway Guard Light	All
6804-39	Heavy Baseplate, Runway Guard Light	All
6804-41	Pin, Quick Release, Runway Guard Light	All
6804-42	Pipe Grommet	All
6804-47	Gasket, Side - RGL	All
6804-49	Gasket, Top - RGL	All
6804-50	Transformer - RGL	Mode 2 Only
6804-51	Gasket, Bottom - RGL	All
6804-54	Lanyard, RGL	All
6804-55	Tether Assembly, Runway Guard Light	All
6804-59	Bracket, Tether - RGL	All
6804-62	Yoke Assembly, Runway Guard Light	All
6804-63-1	Cable Assy., Upper - Runway Guard Light	All With Monitor
6804-63-2	Cable Assy., Lower - Runway Guard Light	All With Monitor
6804-70	2" Conduit Lock Nut	All
6804-110	Control & Monitor Board Assy. - Mode 1 - RGL	Mode 1 Only
6804-210	Control & Monitor Board Assy. - Mode 2 - RGL	Mode 2 Only
650-20	Seal, Stuffing Tube	All
980-1A-4	Cable Assembly	All w/o Monitor
5562-32SP	Photocell	Mode 2 Opt.
5562-32A	Photocell Socket and Mounting Bracket	Mode 2 Opt.

8.0 INSTALLATION DETAILS

The elevated RGL fixtures are installed at a runway holding position to provide a distinctive warning to anyone that they are about to enter an active runway. Normally the L-804 style RGLs are installed in pairs, one on either side of the taxiway. Refer to FAA Advisory Circular, AC 150/5340-28, *Low Visibility Taxiway Light Systems* for dimensional location of the L-804 RGL.

NOTE:
L-804 RGL shall not be stake mounted, per

FAA AC 150/5345-46B.

The RGL is designed to be installed on an L-867B light base housing using an 6804-39 heavy duty base plate. The RGL is supplied with a frangible coupling, L- 823 style cable assembly, lock ring, L-867 Baseplate, and tether assembly ready to install on an L867B light base.

8.1 Installation Tools Required

The following is a list of the minimum required tools to fully install the Multi Electric L804 Style Runway Guard Light on an existing L867B light base with power and control cabling in place.

1. Screw Driver, Flat Blade
2. Screw Diver, Phillips Blade
3. Slip Joint Pliers – 12”
4. Level 6” or Torpedo Style
5. Socket Wrench
6. Socket – 7/16”
7. Socket – 9/16”
8. Allen Wrench – 3/16”
9. Allen Wrench – 3/8”
10. Electric / Battery Drill Motor
11. Conduit Hole-saw 3 / 4”

8.2 Installation

The following procedures shall serve as a guide to the mechanical installation and mounting of the RGL to an existing L867B Light base. Consult all installation drawings and requirements if available for site specific requirements. The electrical connection in the L867B Light base must be made prior to mounting the 6804-38 Heavy Baseplate.

8.2.1 Below Grade (Ground) Electrical installation

The electrical connections will very by the operating mode and the requirement for monitoring. Refer to the appropriate below grade wiring procedures below for this installation or detailed job drawings and specifications if available.

8.2.1.1 Below Grade Electrical Connection Mode 1 with Monitor

The below grade connections for the Mode 1 RGL include the installation of a 200W 6.6A to 6.6A, or 20A to 6.6A isolation transformer to the series circuit. The included below grade wiring harness part number 6804-63-2 has a molded L823 secondary connector plug that is connected to the secondary of the isolation transformer. The ground lead on the wiring harness is connected to the ground lug on the L867B light base. The remaining two leads are the alarm connections. These connections are made to the alarm wiring existing in the L867B light base. The actual alarm wiring will depend on the supplier of the alarm monitoring equipment. The 5-pin receptacle is mounted to the 6804-38 Baseplate (cover).

8.2.1.2 Below Grade Electrical Connection Mode 1 without Monitor

The below grade connections for the Mode 1 RGL include the installation of a 200W 6.6A to 6.6A, or 20A to 6.6A isolation transformer to the series circuit. The secondary of the isolation transformer will be secured to the bottom of the 6804-38 Baseplate (cover).

8.2.1.3 Below Grade Electrical Connects Mode 2 with Monitor

The below grade connections for the Mode 1 RGL include the installation of an L823 secondary receptacle on the main voltage leads. If a neutral is present (110V or 120V system) the neutral should be connected to the larger pin and the line to the smaller pin. Use the proper techniques and installation tools recommended by the receptacle manufacturer. The included below grade wiring harness part number 6804-63-2 has a molded L823 secondary connector plug that is connected to the main power receptacle. The ground lead on the wiring harness is connected to the ground lug on the L867B light base. The remaining two leads are the alarm connections. These connections are made to the alarm wiring existing in the L867B light base. The actual alarm wiring will depend on the supplier of the alarm monitoring equipment. The 5-pin receptacle is mounted to the 6804-38 Baseplate (cover).

8.2.1.4 Below Grade Electrical Connects Mode 2 without Monitor

The below grade connections for the Mode 1 RGL include the installation of an L823 secondary receptacle on the main voltage leads. If a neutral is present (110V or 120V system) the neutral should be connected to the larger pin and the line to the smaller pin. Use the proper techniques and installation tools recommended by the receptacle manufacturer. The receptacle will be mounted to the 6804-38 Baseplate (cover).

8.2.2 Installation Above Grade (Ground)

The above grade installation consists of general (common) installation procedures, and specific procedures for mode 1 or mode 2 fixture installations. These procedures are

intended to be the minimum required for installation of the RGL. Refer to site specific drawings and installation plans.

8.2.2.1 General Fixture Mounting and Installation

The following procedures are used to mount all RGL fixtures. Refer to figure 9-8 through 9-10.

1. Route the below ground wiring harness through the heavy base plate 6804-38.
2. Attach the base plate to the L867B Light Base but do not tighten the bolts.
3. Feed the upper cable through the yoke center tube, frangible coupling and locking ring.
4. Connect it to the lower cable.
5. Install the frangible coupling to the base with the lock ring using anti-seize compound.
6. Orient the hole at the bottom of the V pattern in the direction the beam should point (horizontally) and securely tighten the locking ring to the Baseplate. See Figure 9-6.
7. Place the fixture yoke over the frangible coupling and place the alignment pin in the locating hole.
8. Attach the Fixture to the yoke if required with the ½'' cap screw and washers.
9. Place a ¼-20 cap screw in each side aligning the elevation to the initial setting. See Figure 9-7.
10. Tighten the two locking screws on the rear of the yoke tube to the frangible coupling.
11. Attach the tether cable to the bottom of the yoke on the side the farthest from the taxiway. See figures 9-9 and 9-10.
12. Attach the other end of the tether to the base plate bracket.
13. Attach the base plate bracket to one of the mounting bolts on the Baseplate.
14. Tighten all hardware on the base plate, yoke and fixture.

This completes the mechanical mounting of the fixture.

8.2.2.2 Mode 1 Installation

No further installation is required for the Mode 1 RGL.

8.2.2.3 Mode 2 Installation

The following procedures are required to complete the installation of the Mode 2 RGL.

1. Mount the photocell bracket to the side up-right support with the best northern view and away from stray or aircraft lights. Refer to figure 9-10.
2. Install the photocell to the bracket and align the window toward the north and away from direct stray light.
3. Open the front face of the RGL by loosening the three self-retaining fasteners and lowering the face to rest on the lanyard.

4. Locate a clear position away from the lamps and internal components on the rear of the RGL to make an entrance hole for the photocell wiring.
5. Using the hole-saw cut a hole for the entrance wiring.
6. Use flexible liquid tight conduit and connectors to route the photocell wiring to the rear of the RGL.
7. Add sufficient wire to allow connection to the photocell to the terminal block located in the front of the power transformer.
8. Refer to the connection diagrams in Figure 9-3 to wire the photocell.
9. Make any required changes for the proper operating voltage of the RGL on the terminal block located in front of the power transformer. Refer to the wiring diagrams in Figure 9-3 and 9-4 for the proper connections.
10. Replace the front panel and secure the three self-retaining fasteners on the top of the face.

This completes the installation of the Mode 2 RGL.

8.3 Setup and Aiming

The final aiming adjustments are made by locating the vertical and horizontal angles required for maximum conspicuity of the flashing yellow light.

1. Loosen the locking hardware and reposition the indexing hardware for the final positioning. See Figures 9-6 and 9-7.

2. Run the maintenance procedures in section 5 for the final checkout of the system.

This completes the installation and setup of the Runway Guard Light.

9.0 DRAWINGS AND FIGURES

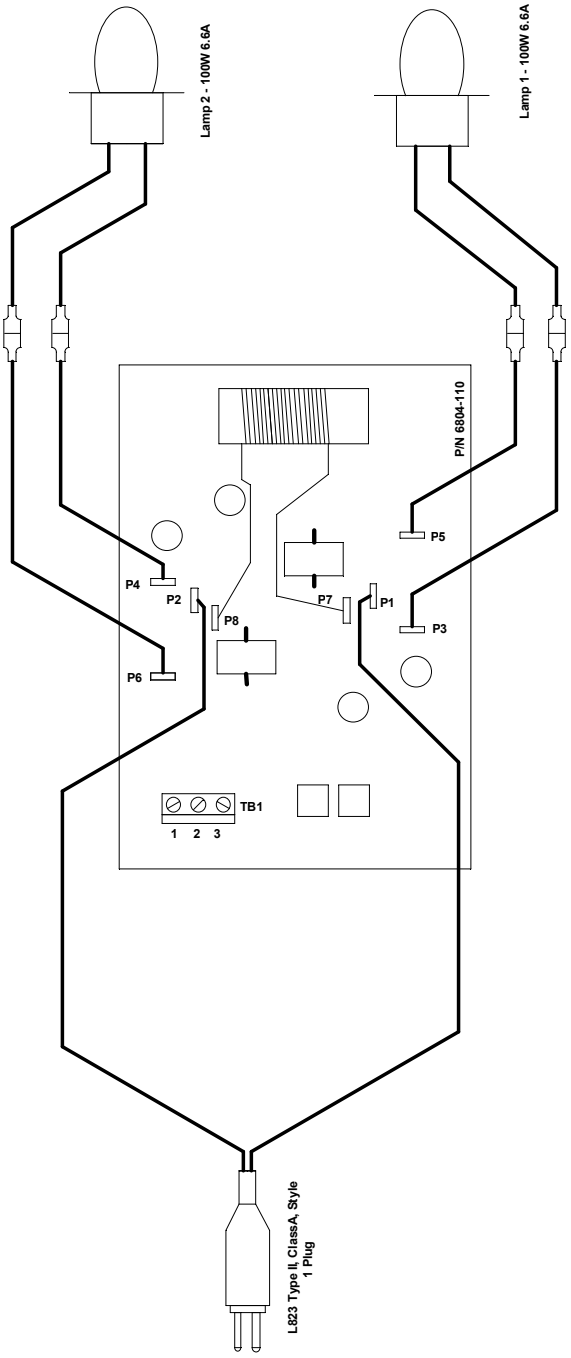


Figure 9-1 Wiring Diagram Series Powered Mode 1 without Monitoring.

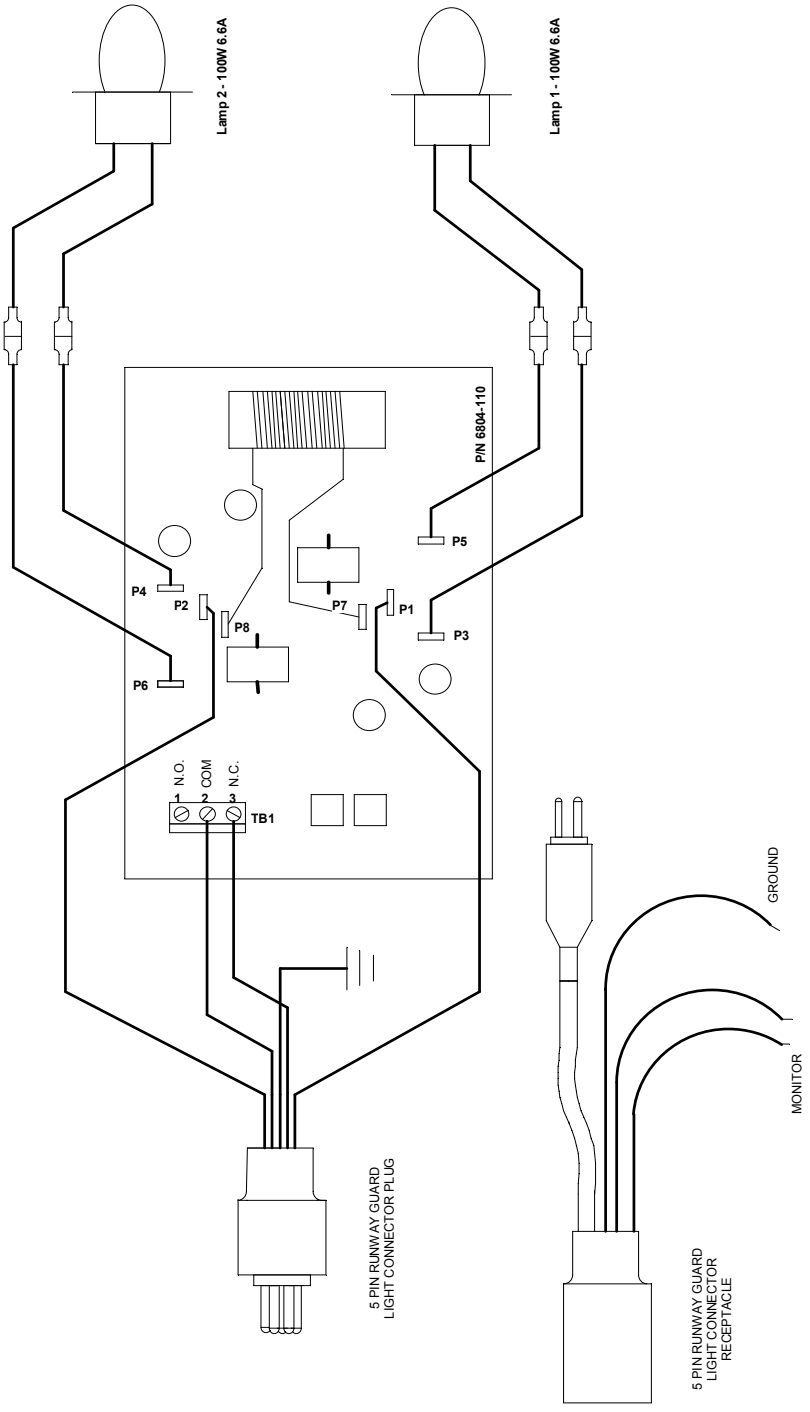


Figure 9-2 Wiring Diagram Series Powered Mode 1 with Monitoring

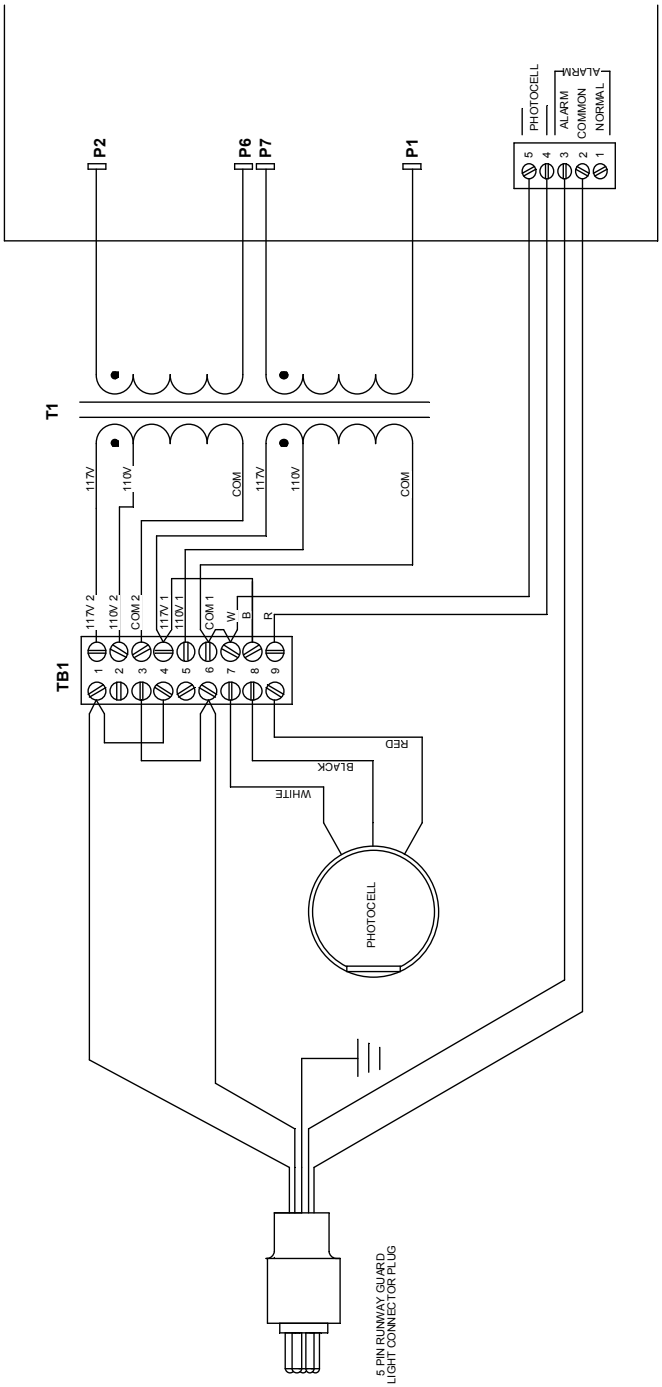


Figure 9-3 Wiring Diagram Mode 2 120V Operation with Monitoring

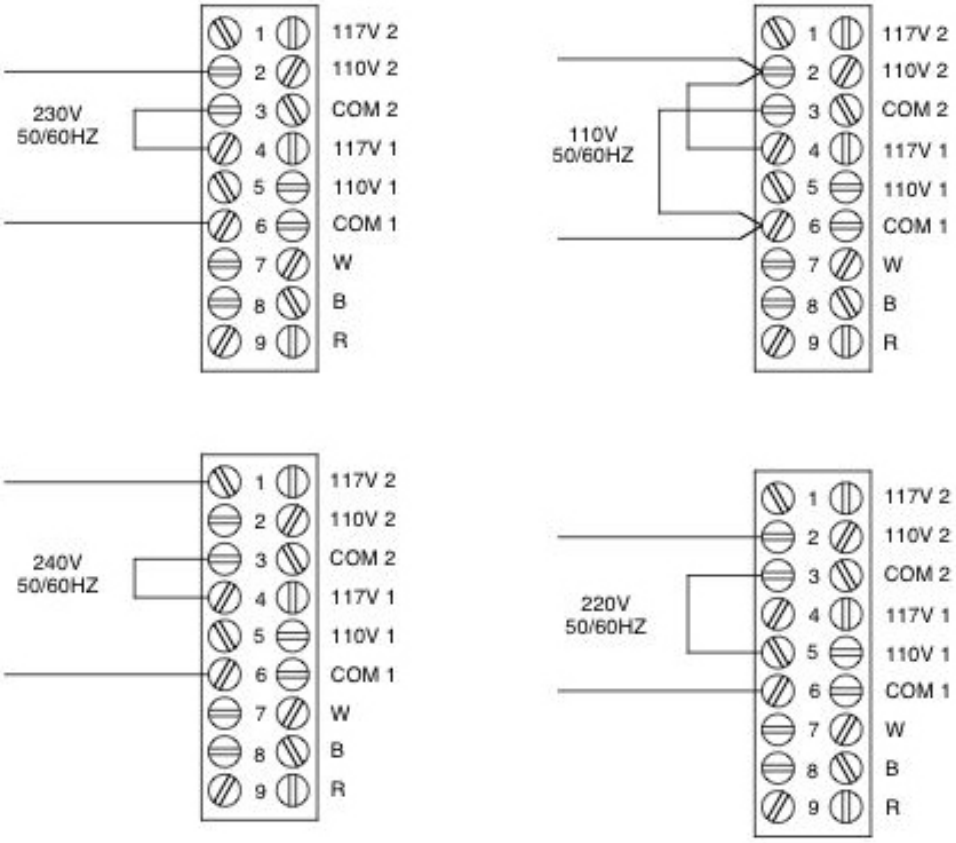


Figure 9-4 Alternate Input Voltage Configuration

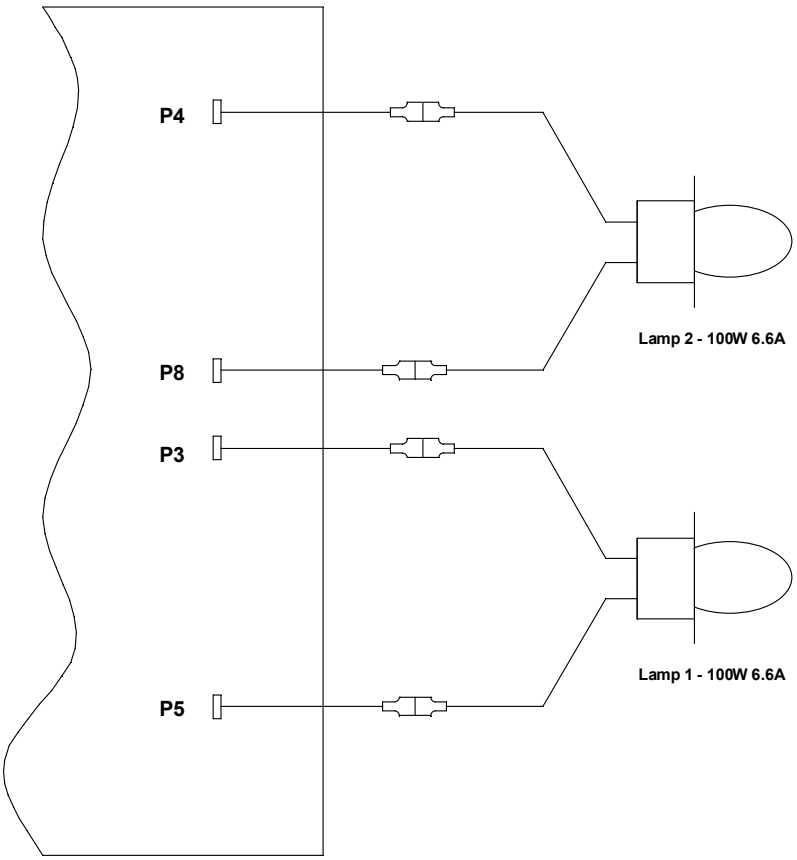


Figure 9-5 Lamp Wiring for the Mode 2 RGL

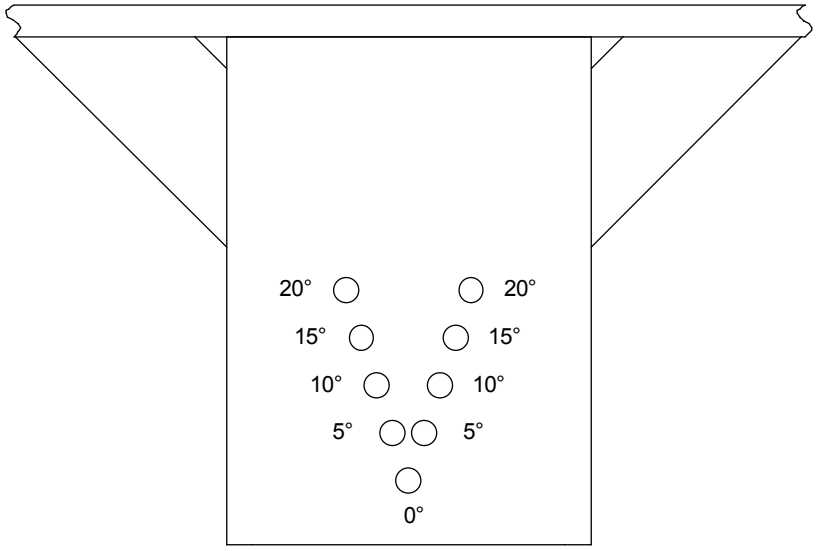


Figure 9-6 Horizontal Aiming Index.

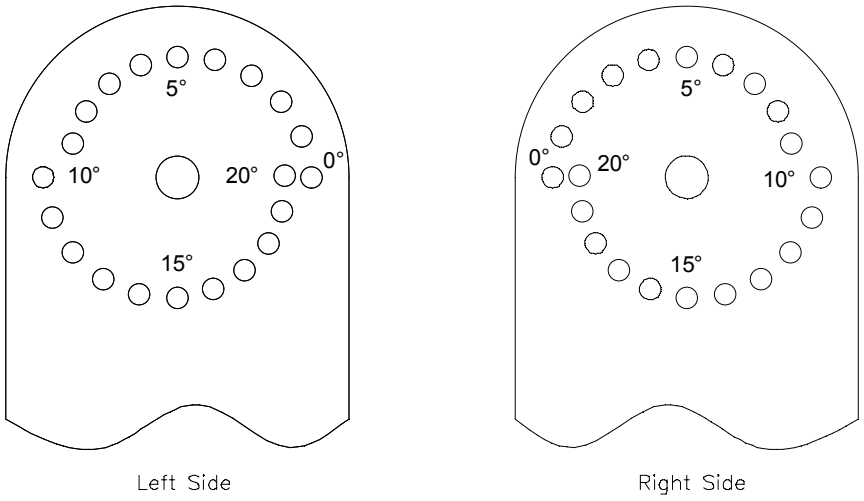


Figure 9-7 Vertical Aiming Index.

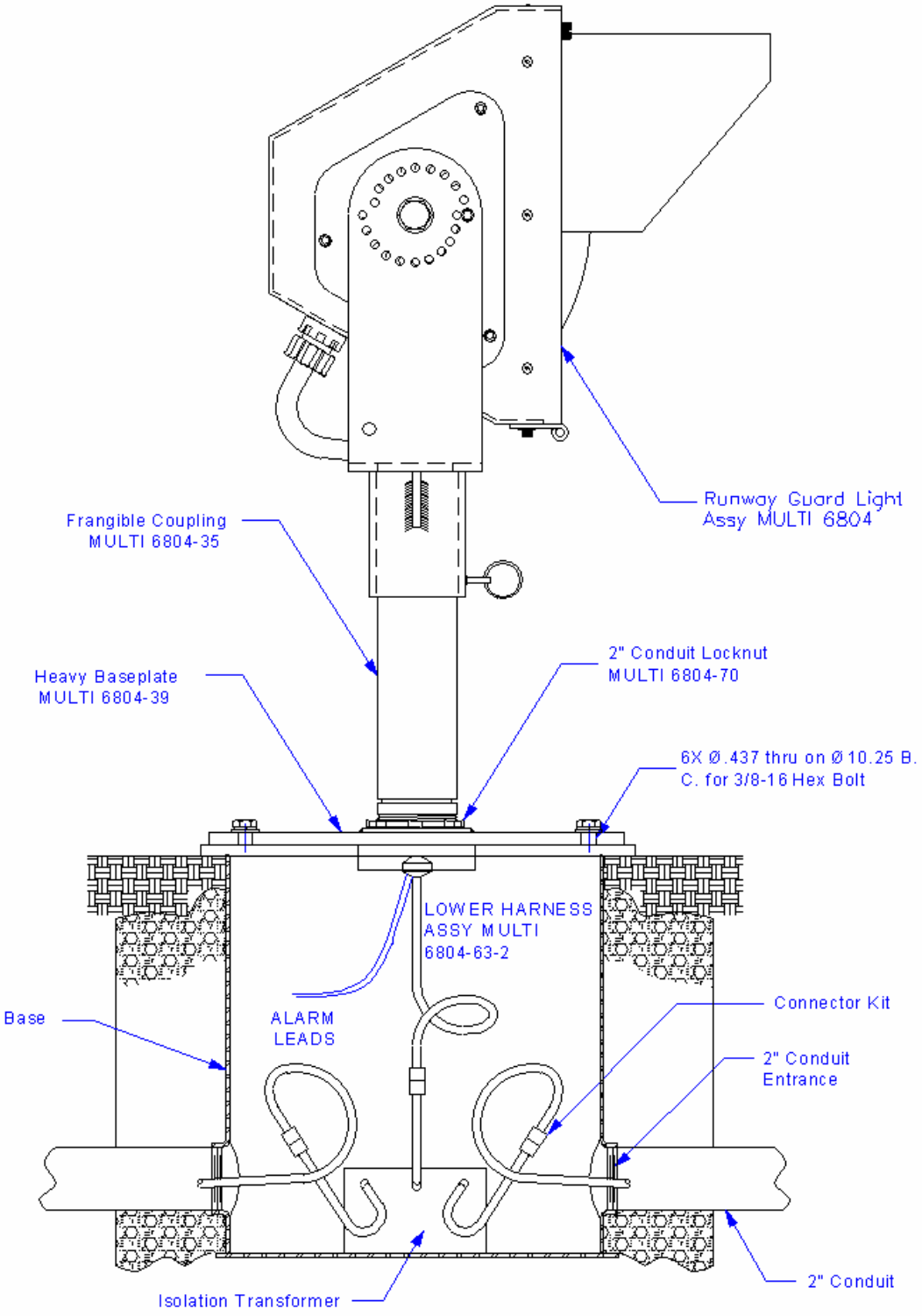


Figure 9-8 Side View of RGL Installation. (Tether omitted for clarity.)

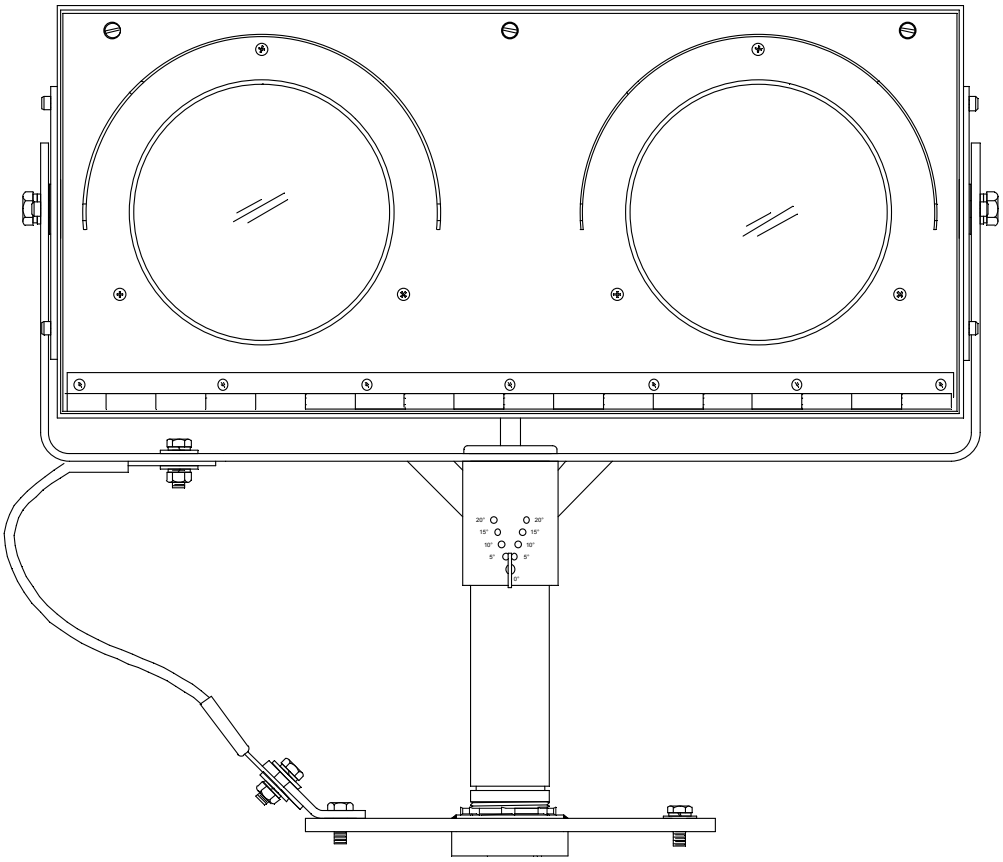


Figure 9-9 Runway Guard Light — Front View with Tether

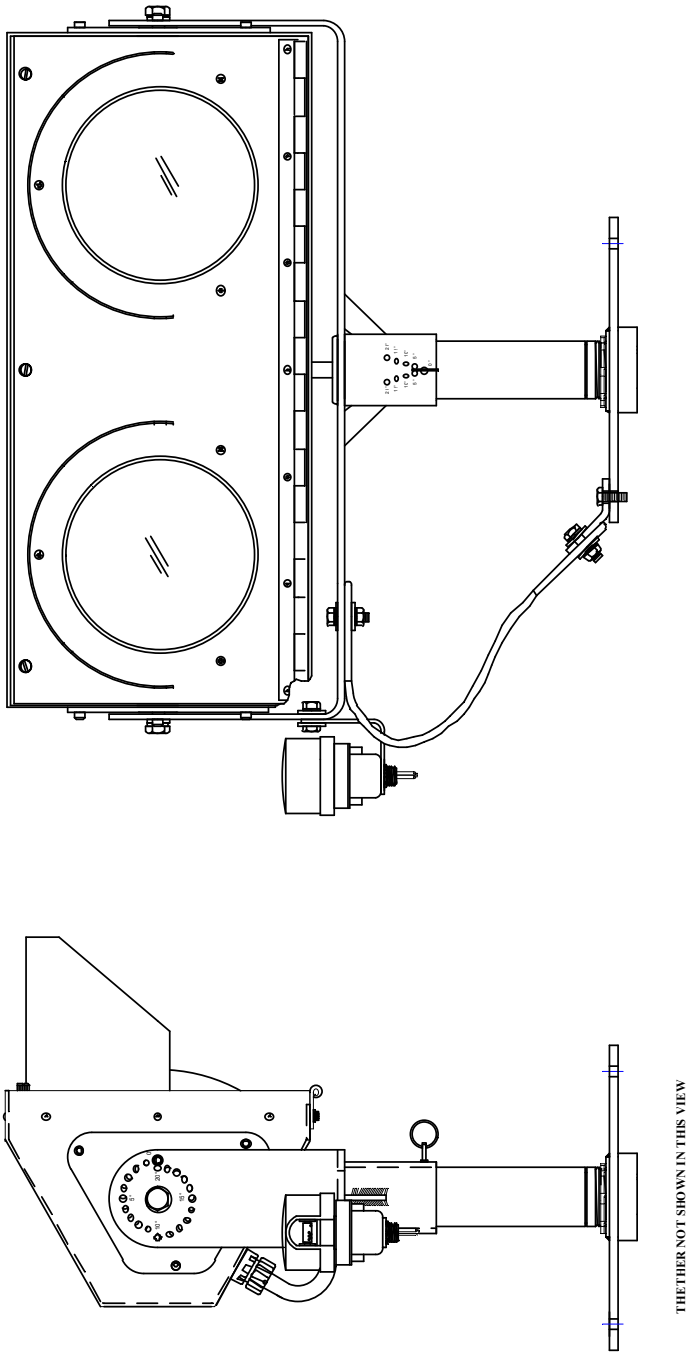


Figure 9-10 Runway Guard Light – Mode 2 with Photocell