L-802A 36-Inch Airport Rotating Beacon

(1000 Watt Metal Halide Lamp and PRC)

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AC 150/5345-12C

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Record of Changes

Page	Rev	Description	EC No.	Checked	Approved	Date
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All	C	Changed to new title page. Changed ADB to ADB Airfield Solutions.	00696	KJ	WT	5/16/01

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Warranties

Products of ADB Airfield Solutions manufacture are guaranteed against mechanical, electrical, and physical defects (excluding lamps) for a period of one year from the date of installation or a maximum of two years from the date of shipment and are guaranteed to be merchantable and fit for the ordinary purposes for which such products are made.

ADB Airfield Solutions will correct by repair or replacement, at its option, equipment or parts which fail because of mechanical, electrical or physical defects, provided that the goods have been properly handled and stored prior to installation, properly installed and properly operated after installation, and provided further that Buyer gives ADB Airfield Solutions written notice of such defects after delivery of the goods to Buyer.

ADB Airfield Solutions reserves the right to examine goods upon which a claim is made. Said goods must be presented in the same condition as when the defect therein was discovered. ADB Airfield Solutions furthers reserves the right to require the return of such goods to establish any claim.

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

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This is ADB Airfield Solutions's sole guarantee and warranty with respect to the goods; there are no express warranties or warranties of fitness for any particular purpose or any implied warranties of fitness for any particular purpose or any implied warranties other than those made expressly herein. All such warranties being expressly disclaimed.

Disclaimers

This manual could contain technical inaccuracies or typographical errors. ADB Airfield Solutions reserves the right to revise this manual from time to time in the contents thereof without obligation of ADB Airfield Solutions to notify any person of such revision or change.

Details and values given in this manual are average values and have been compiled with care. They are not binding, however, and ADB Airfield Solutions disclaims any liability for damages or detriments suffered as a result of reliance on the information given herein or the use of products, processes or equipment to which this manual refers. No warranty is made that the use of the information or of the products, processes or equipment to which this manual refers will not infringe any third party's patents or rights. The information given does not release the buyer from making their own experiments and tests.

L-802A 36-Inch Airport Rotating Beacon (1000 Watt Metal Halide Lamp and PRC)

1. Safety

This section contains general safety instructions for using your 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. 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.

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.

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

Safety Symbols *(contd.)*

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.

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.

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.

ADB 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 ADB Airfield Solutions replacement parts
- failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards
- using materials or auxiliary equipment that are inappropriate or incompatible with your ADB Airfield Solutions equipment
- allowing unqualified personnel to perform any task

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 ADB 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.

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.

Operation *(contd.)*

- 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.

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.

Maintenance and Repair

Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks. Only persons who are properly trained and familiar with ADB 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.
- Connect all disconnected equipment ground cables and wires after servicing equipment. Ground all conductive equipment.
- Use only approved ADB Airfield Solutions replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.

Maintenance and Repair
(contd.)

- 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.

2. Description

See Figure 1. This section describes the ADB Airfield Solutions L-802A 36-inch (914.4 mm) rotating beacon. The L-802A rotating beacon is designed to enable pilots to locate the airport from a range up to 80 miles (49.68 km) and is manufactured to specification AC 150/5345-12C.

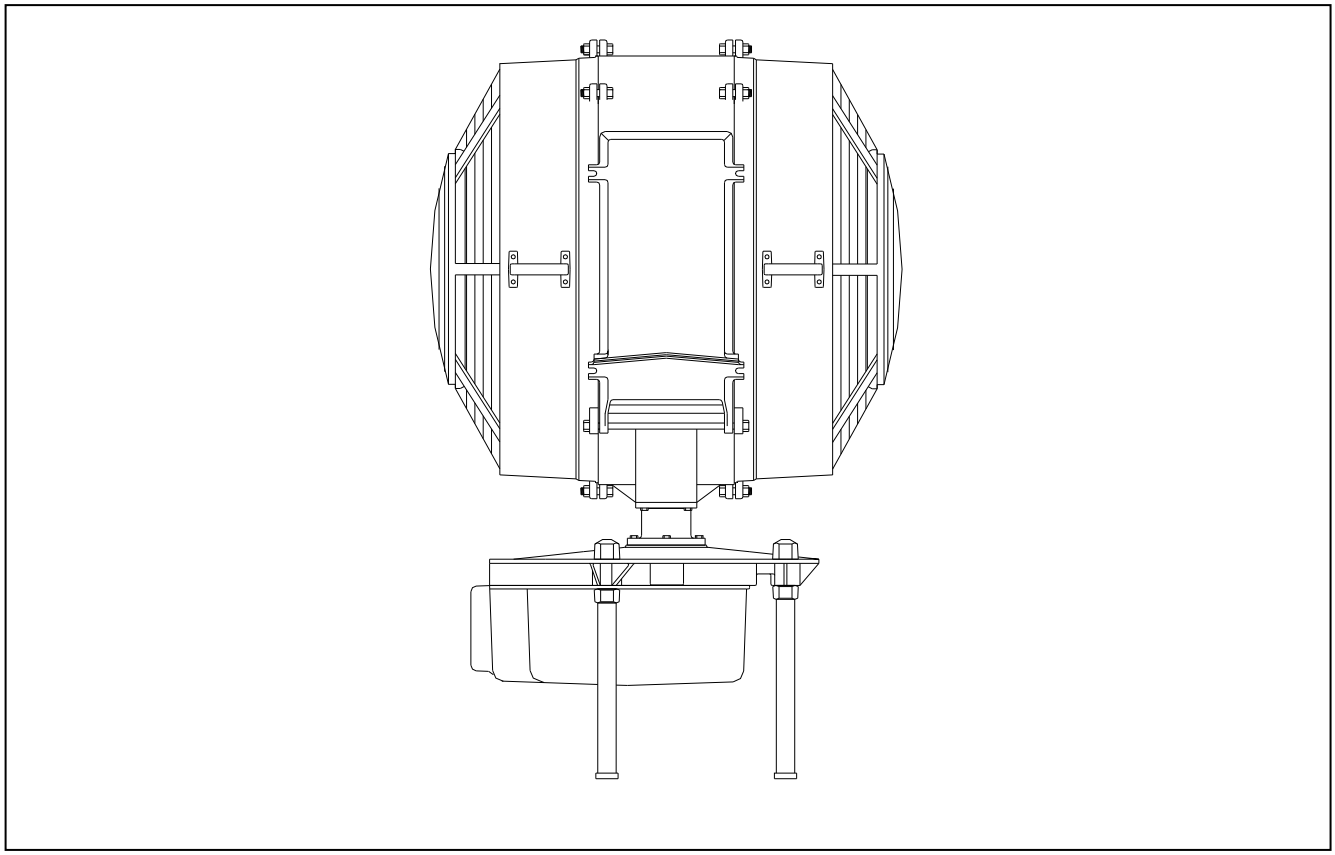

Figure 1. L-802A Rotating Beacon

The L-802A rotating beacon consists of the base and the head. The base houses electrical equipment and the 1/6 HP motor. The head houses the lamps and the precision filters.

L-802A Rotating Beacon: Required Equipment

Refer to Table 1 for required equipment that is supplied. Refer to Table 2 for required equipment that is not supplied. Refer to the *Parts* section for ordering information.

Table 1. Required Equipment Supplied

Description	Quantity
L-802A rotating beacon	1
Instruction manual	1

Table 2. Required Equipment Not Supplied

Description	Quantity
5/8–11 x 2 in. long (minimum) mounting bolts, lockwashers and nuts	4
Wrench	1
Voltmeter	1
Insulation tester	1
Lightening rod	1
Torque wrench, 0–200 in-lb (0–22.6 Nt-m) with sockets and hex drive socket	1
Set of screwdrivers (straight blade and Phillips head)	As required
Ground wire for lightening rod	As required
Set of pliers	As required
Esso #325, or equivalent, silicone grease	As required
Cotton cloths	As required
Liquid glass cleaner	As required
Allen wrenches	As required
20 A breaker	1

Specifications

This subsection describes the specifications for the L-802A rotating beacons. Refer to the *Parts* section for part numbers.

Input Voltage

120 Vac

Input Power

1680 W

Lamps

1000 W metal halide

Rated Lamp Life

18,000 hours

Vertical Beam Intensity

Vertical Degrees	Minimum Beam Intensity (White Light) Candelas (cd)
1 to 2 degrees	37, 500
2 to 8 degrees	75,000
8 to 10 degrees	37,500

Beam Center

The L-802A is factory set at 5 degrees above horizon.

Motor

120 V, 60 Hz

Flash Rate

24-30 flashes per minute alternating white and green

Environmental Operating Conditions

The L-802A rotating beacon is designed to operate under the conditions presented below for temperature, humidity, and rain and hail.

Temperature

-30 to + 55 °C (-22 to +131 °F)

Relative Humidity

Up to 100 %

Rain and Hail

Designed to operate in rain and hail

Paint

Orange

L-802A Glassware

One clear filter, one green filter

Dimensions

See Figures 2 and 3. Below is the beacon height and diameter for head rotation.

Height:	66 in. (1.676 m)
Diameter required for head rotation:	48 in. (1.22 m)

Dimensions *(contd.)*

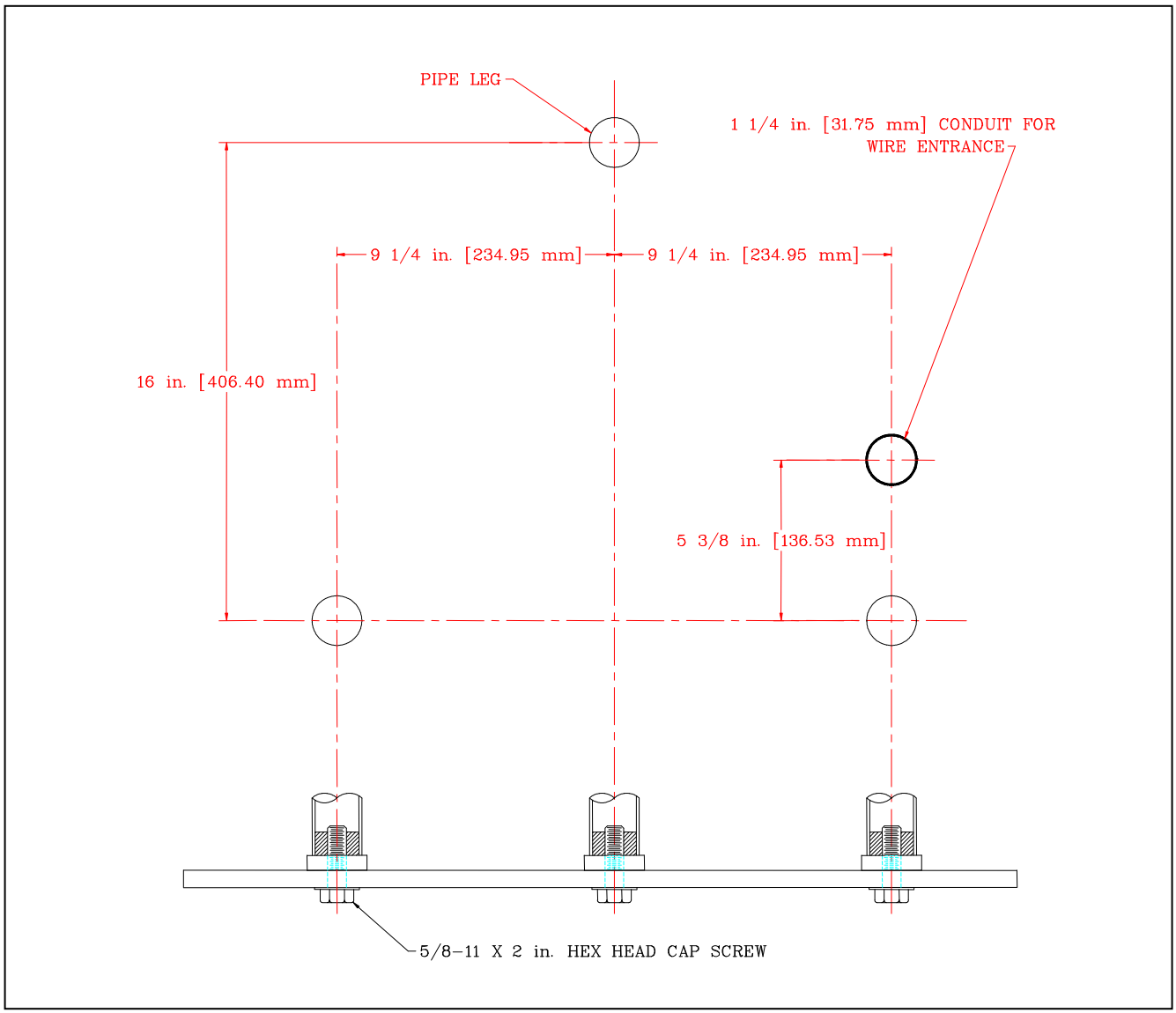

Figure 2. Mounting Dimensions

Dimensions *(contd.)*

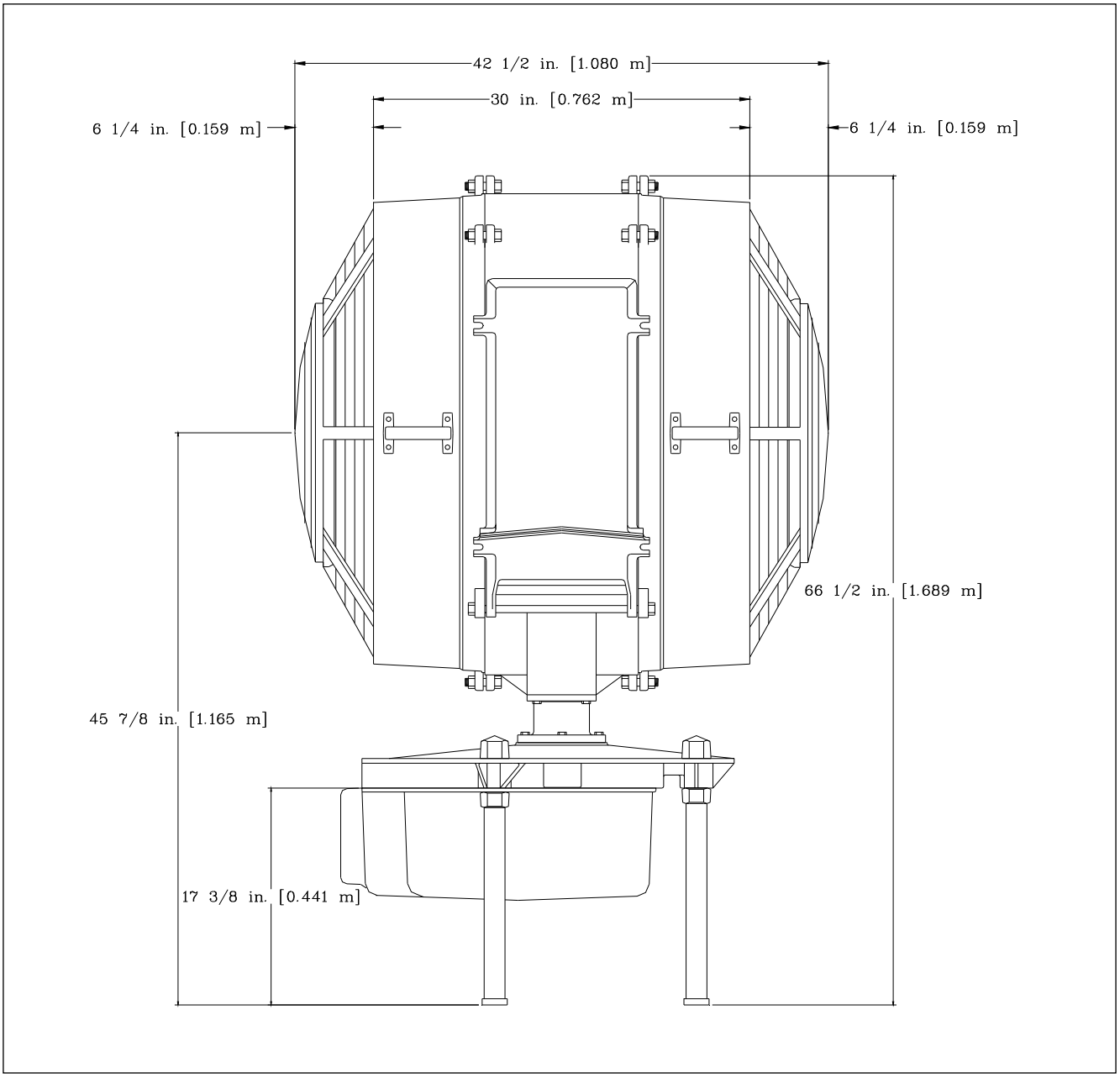

Figure 3. Overall Mounting Dimensions

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.

Introduction

This section describes instructions for installing the L-802A 36-inch rotating beacon.

Unpacking

Handle equipment very carefully to prevent component damage. Note any exterior damage to the crate that might lead to detection of equipment damage. If you note any damage to any equipment, file a claim with the carrier immediately. The carrier may need to inspect the equipment.

Hoisting

The L-802A beacon is designed to be hoisted into place using the mounting pallet on which the beacon is strapped.

WARNING: Do not attempt to hoist the beacon into place by attaching the lifting device to the rotating head. This can cause permanent damage to the drive train.

If you cannot hoist the beacon as an assembled unit, remove the rotating optical assembly so that you can hoist the beacon into position as two separate pieces. Whatever method is used, make sure to tether the beacon so that it will not swing into anything that would damage the outer castings and lens assembly.

Mounting Beacon

When preparing the beacon for mounting, follow the guidelines below.

- See Figure 2. Prior to hoisting, check the triangular bolt hole pattern to make sure the mounting bolts can be threaded into the hub on the bottom of the leg without binding. The bolt hole pattern is 16 x 18.5 inches (426.4 x 469.9 mm) for a three-hole mounting pattern.
- After the base assembly is in position to be mounted, back off the upper cap nuts to allow the mounting legs to move freely as the 5/8–11 mounting bolts are threaded through the mounting platform into the bottom of the leg.
- Once all three bolts are in place, tighten them securely.

Leveling Beacon

The L-802A beacon is designed to operate properly when the axis of rotation is perpendicular to the ground. A machined reference surface is cast directly into the base so that the beacon can be leveled in the field. The leveling surface is on the top side of the base casting adjacent to the bearing block.

To level the beacon, perform the following procedure:

1. Place a 360-degree bubble level on the leveling surface. Refer to the flat pad on the top surface of the bedplate.

2. Manipulate the lower retaining nuts on the mounting leg under the base casting to adjust the beacon position. The beacon should now be level.

3. Tighten the upper cap nuts to secure the beacon.

Wiring

Refer to Figure 14 in the *Wiring Schematics* section for the internal wiring diagram. The L-802A beacon operates on 120 volt, 60 Hz power. The beacon requires approximately 1680 watts of power under normal operation. Wiring is accomplished through a removable cover plate on the bottom of the base casting. The plate serves as the cover on the cast wiring entrance for the beacon. The plate can be fitted with a suitable connector that will accept either a 1-inch (25.4 mm) rigid conduit or a 1-inch (25.4 mm) EMT. The connections for the incoming power are connected to terminal strip positions 1 and 2.

NOTE: All internal wiring is 12 AWG/600 V. External wiring must be a minimum of 10 AWG/600 V. All installation wiring should conform to the applicable sections of the National Electric Code and Local Codes.

Elevating Lamp

The beacon's lamp is factory adjusted to give maximum intensity at approximately 5 degrees above horizontal. The beacon uses a 1000 W metal halide lamp that has a beam vertically broader than the older designs using an incandescent light source. As a result, the L-802A beacon provides significant intensity both above and below the nominal setting. This eliminates the necessity for precise vertical adjustment of the beam. However, some adjustments may be dictated by local operating conditions.

The beam can be elevated by lowering the lamp, and lowered by raising the lamp slightly. Reference grooves are provided on the lamp adjustment stem to verify the elevation setting of the beam. Each groove moves the beam one degree when aligned with the top edge of the stem bushing that is welded on top of the lamp support assembly. The five-degree and the ten-degree settings are stamped on the side of the adjusting stem in a recessed area.

Elevating Lamp *(contd.)*

To elevate the lamp beam, perform the following procedure:

1. See Figure 4. Loosen the hex head screw (3).
2. Raise the lamp (1) to the appropriate reference groove (2) to lower the beam or lower the lamp to the appropriate reference groove to raise the beam.
3. Tighten the hex head screw (3).

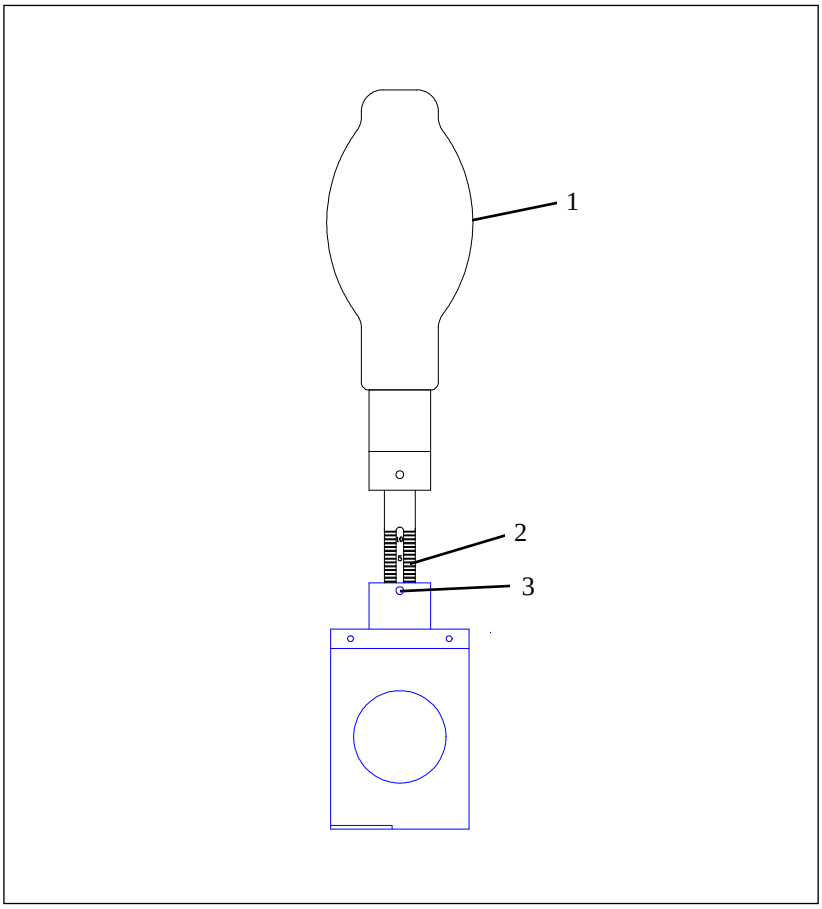

Figure 4. Elevating Lamp Beam

1. Lamp
2. Reference Grooves
3. 1/4–20 Hex Head Screw

4. Maintenance

This section provides maintenance information for the L-802A rotating beacon.

Maintenance Schedule

To keep the L-802A rotating beacons operating efficiently, follow a preventive maintenance schedule. Refer to Table 3. Refer to FAA AC 150/5340-26 for more detailed information.

Table 3. L-802A Rotating Beacon Maintenance

Interval	Maintenance Task	Action
Daily	Check for lamp failure.	Replace lamp. Refer to *Replacing Lamps* in this section.
Monthly	Check for twenty-four flashes per minute to see if beacon has correct rpm.	If the rpm is incorrect, check the motor and shaft bearing.
	Check for dirty lamp glassware.	Clean lamp glassware.
Semi-annually	Check for input voltage out of tolerance.	Record reading. If the voltage is out of tolerance, contact the power company or install an autotransformer. The voltage is out of tolerance if it is within ±10% rated lamp voltage.
	Check lightning rod.	Tighten loose connections. Check and record ground resistance.
	Check upper bearing	Grease, if necessary. Use high quality, low temperature silicone grease (Esso #325 or equivalent).
Annually	Check to see if the beacon is level.	Make the beacon level by using a shim, if necessary. Check the level in four directions. Refer to *Leveling Beacon* in the *Installation* section.
	Check for loose or broken wiring, lugs, and conduit or deteriorated gaskets.	Repair or renew wiring when needed. Tighten loose conduit supports and connections. Replace deteriorated gaskets.

Maintenance Procedures

This subsection describes the following maintenance procedures:

- replacing lamp
- cleaning lenses
- cleaning lamp housing
- lubricating parts
- adjusting slip clutch

Replacing Lamp

Refer to *Replacing Lamp* in the *Repair* section.

Cleaning Lenses

Clean lenses periodically with alcohol or glass cleaner and soft cloths. Wipe dry with a clean soft cloth.

Cleaning Lamp Housing

Remove dust and dirt from the lamp housing using a soft cloth or sponge with soap and water.

Lubricating Parts

This subsection describes lubrication requirements for the vertical main shaft, the motor, and the worm gear. Refer to Table 4.

Table 4. Grease Schedule

Interval	Part
Periodic	Main shaft upper bearing
Twice a year (under normal conditions)	Main shaft turntable grease fitting

Vertical Main Shaft

Two ball bearings support the main shaft. The lower bearing is sealed and permanently lubricated. The upper bearing is packed with grease at the factory and requires periodic lubrication. An Alumite grease fitting located on the side of the shaft turntable should also be lubricated, under ordinary operation, twice a year.

NOTE: Use high quality, low-temperature silicone grease (Esso #325 or equal).

Motor

The motor is supplied with sealed permanently lubricated bearings.

Worm (Ring) Gear

Apply a small amount of grease (Esso #325 or equivalent) to the worm gear.

Adjusting Slip Clutch

To adjust the tension on the L-802A beacon slip clutch, perform the following procedure:

1. See Figure 5. De-energize the beacon and then remove the lower pan (1) from the beacon.

Adjusting Slip Clutch *(contd.)*

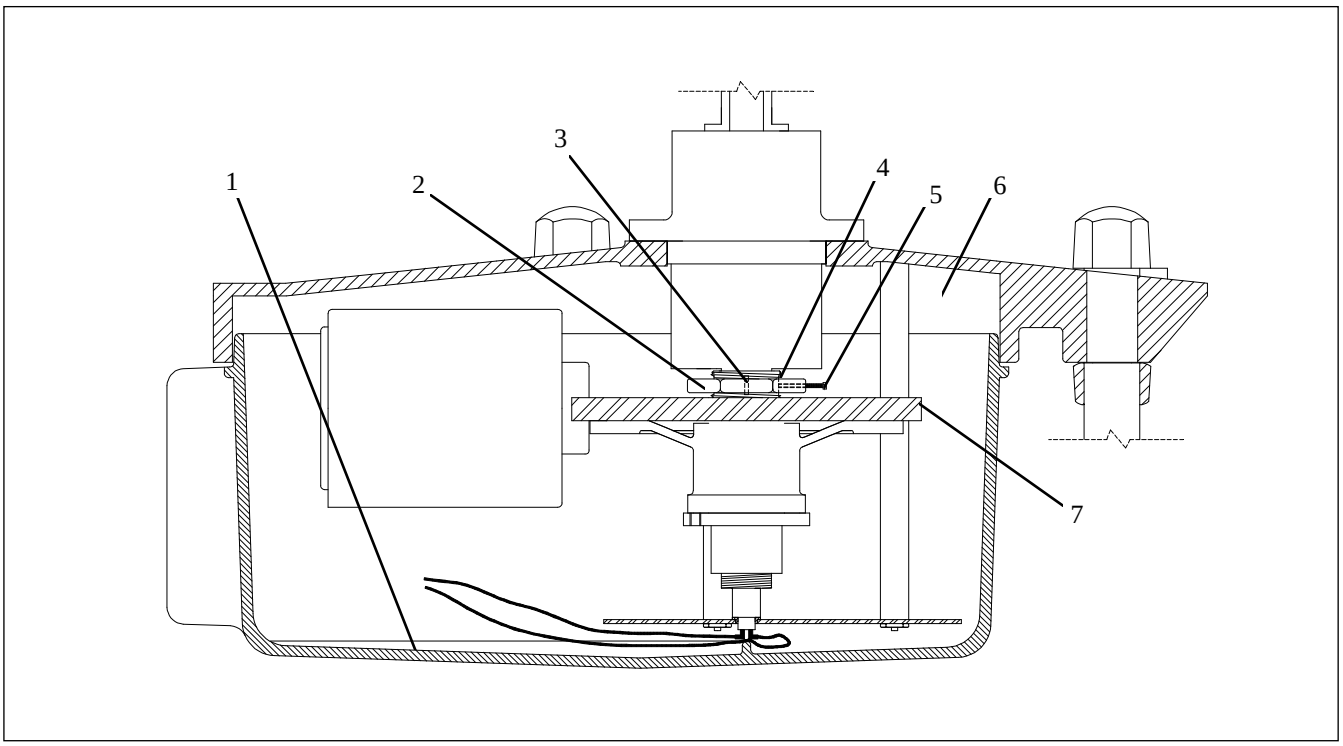

Figure 5. Slip Clutch Adjustment

1. Lower Pan
2. Brass Hex Nut
3. Third Slot on Shaft
4. Vertical Slot on Shaft
5. Socket Head Cap Screw
6. Power Entrance Side
7. Worm Gear

2. From the power entrance side (6) (opposite side from the motor) find the phenolic worm gear (7). Look above the gear and find the brass hex nut (2). Look for the 1/4–20 socket head cap screw (5) located in the side of the hex nut. If the cap screw is not visible, rotate the beacon head by hand until the cap screw comes into view.

Adjusting Slip Clutch *(contd.)*

3. Use an allen hex wrench to remove the cap screw.

4. Use a light source to illuminate the cap screw hole area. Note the vertical slot (4) that is in the shaft aligned with the cap screw hole. Four vertical slots are equally spaced around the shaft.

5. Increase the clutch tension by rotating the beacon head, by hand, counterclockwise until the cap screw hole is aligned with the third slot (3) past the existing slot.

6. Insert the cap screw back into the hex nut and run the screw through the nut and into the slot until the screw is in all the way.

7. Reinstall the lower pan.

NOTE: If the head still does not rotate, adjust in two slot increments until the head begins to rotate.

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 or regulator so that the circuit cannot be energized by remote means before attempting to service the fixture.

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 ADB Airfield Solutions representative for help.

Problem	Possible Cause	Corrective Action
1. Short lamp life	High lamp voltage	Check to see if the correct tap is being used on the ballast.
	Loose connections	Tighten connections.
	Excessive vibrations	Check to make sure the beacon is level. Refer to *Leveling Beacon* in the *Installation* section. Check the bearing and shaft. Replace bearing and shaft, if necessary.
	Bad socket (arcing)	Replace socket.
	High voltage spikes	Check input voltage and external lightning arrestor, if installed.
2. Lamp not lighting	Lamp defective	Replace lamps. Refer to *Replacing Lamp* in the *Repair* section.
	Loose or broken wire	Tighten or replace wire.
	Power rotary connector defective	Replace power rotary connector.
	Fuse blown	Check and replace fuse, if necessary.
	Ballast capacitor defective	Check and replace capacitor.
	Ballast defective	Check and replace ballast, if necessary.
3. Motor not turning	Fuse blown	Test fuse. Replace fuse, if necessary.
	Motor defective	Replace motor.
	Loose or broken wire	Tighten or replace wire.

Problem	Possible Cause	Corrective Action
4. Motor runs but beacon head not rotating	Seized shaft bearing	Replace shaft bearing.
	Worm loose, worn or broken	Replace worm.
	Worm gear teeth damaged or broken	Replace worm gear.
	Clutch slipping	Adjust clutch pressure. Refer to *Adjusting Slip Clutch* in the *Maintenance* section.

6. Repair

This section provides procedures for replacing the L-802A beacon parts listed below.

- replacing motor
- replacing worm or worm gear
- replacing slip clutch
- replacing power rotary connector (PRC)
- replacing lamp

Replacing Motor

WARNING: Disconnect power to beacon before attempting to do any work. Failure to de-energize the beacon could result in serious injury or death by electrocution.

If the motor becomes inoperative and needs to be replaced, refer to the *Parts* section for the part number and contact your ADB Airfield Solutions representative. A service bulletin will be shipped with the motor providing instructions on removing and remounting the motor. Request Service Bulletin ALN064.

To remove and replace the motor, perform the following procedure:

1. See Figure 6. Remove the lower pan (5) by unlatching the four over-the center latches. Place the pan out of the way to facilitate repair work.

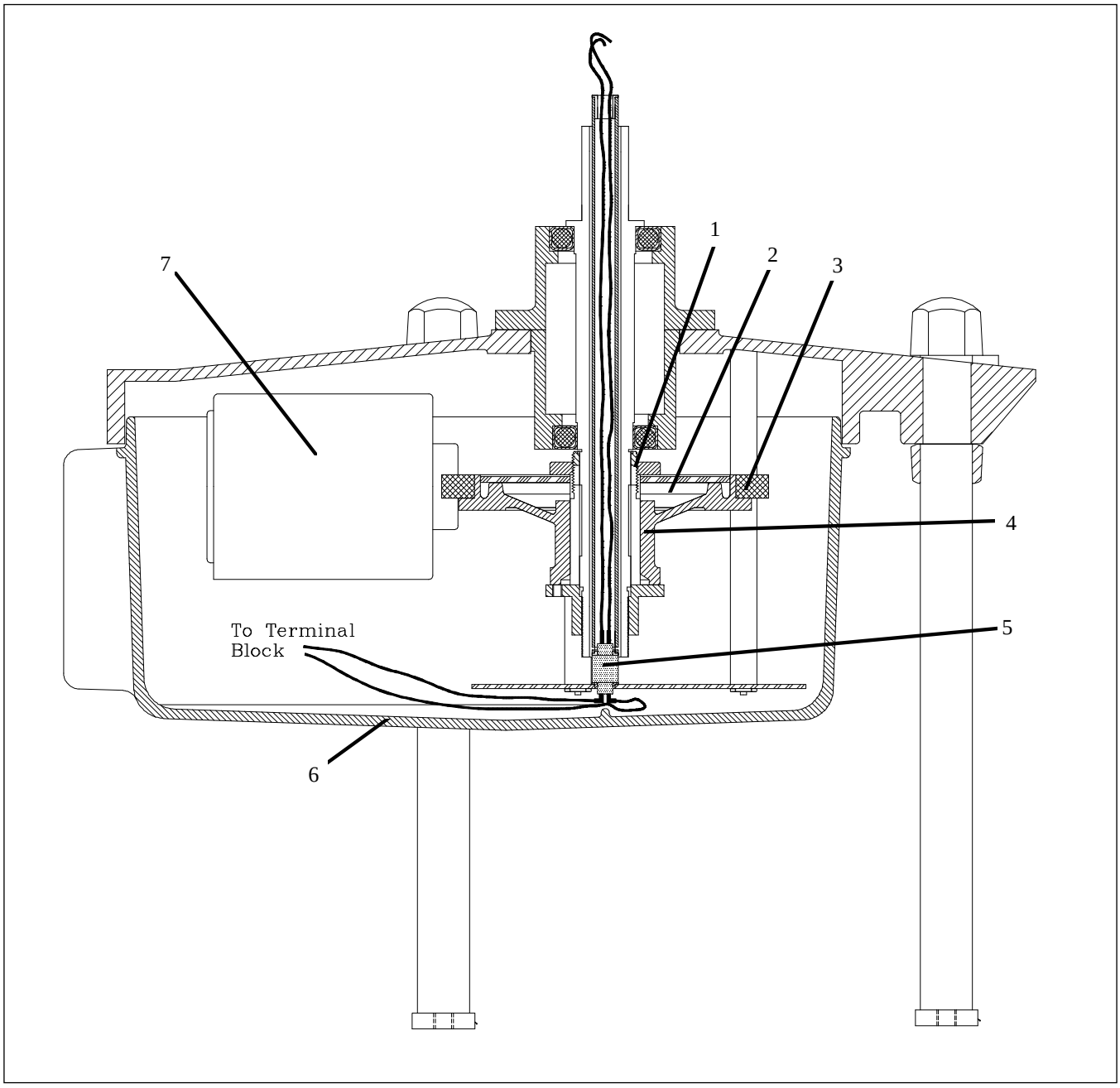

Figure 6. Removing Lower Pan

1. Brass Hex Nut with Set Screws
2. Clutch Plate/Worm Gear Assembly
3. Worm and Worm Gear
4. Brass Collar
5. PRC
6. Lower Pan
7. Motor

Replacing Motor *(contd.)*

2. Locate the terminal block near the motor (7) and disconnect the two motor leads.

3. Loosen and remove the four hex nuts that secure the motor to the bedplate.

NOTE: The motor assembly weighs approximately 15 pounds, so take precautions in handling and removing the motor.

4. See Figure 7. Remove the motor (1) and then remove the worm (5) on the end of the motor shaft (2) by loosening and removing the hex nut (7) on the end of the motor shaft.

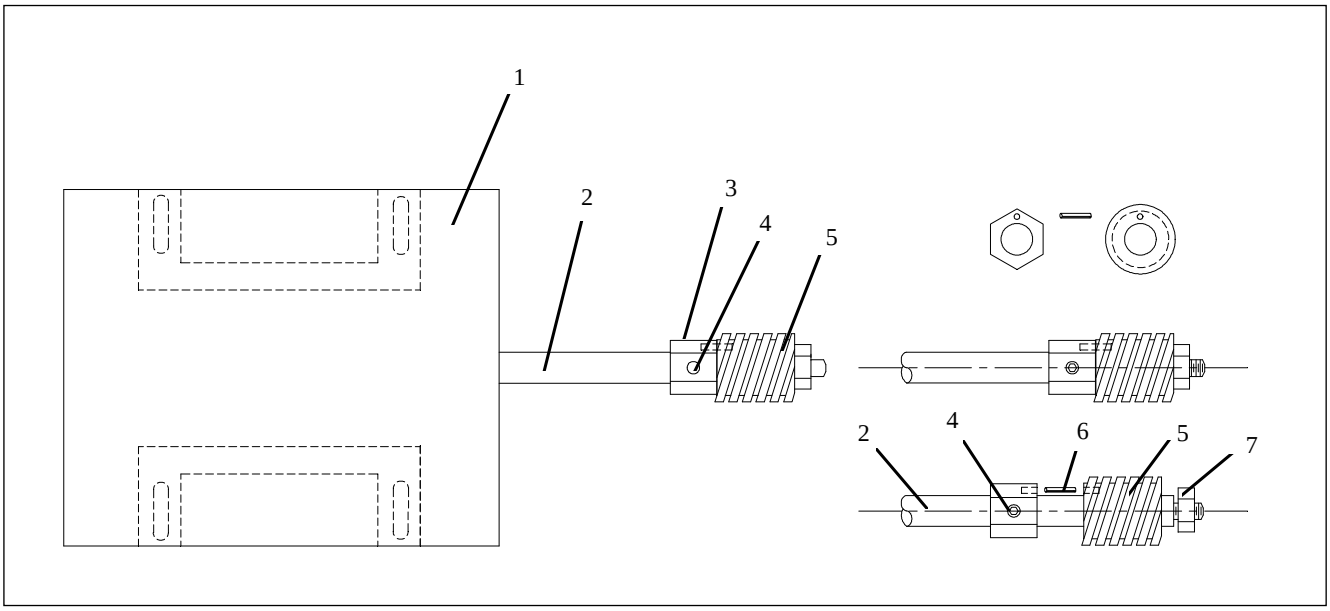

Figure 7. Worm Assembly

1. Motor with Worm Assembly
2. Motor Shaft
3. Set Collar
4. Set Screw
5. Worm
6. Pin
7. Hex Nut

5. Loosen the two allen hex set screws (4) found on the set collar (3). The set collar is located on the opposite end of the worm toward the motor. Pull the worm off of the end of the motor shaft. The worm and set collar are held together with a spring pin (6).

CAUTION: When replacing the set collar, make sure that one of the set screws (4) is aligned with one of the flats located on the side of the motor shaft. Once the set screw is positioned over the flat, tighten the set screw. Failure to tighten this set screw against the flat on the shaft will allow the worm to spin free and prevent the beacon head from turning.

Replacing Motor *(contd.)*

6. Inspect the worm for nicks or scratches. If the worm profile has been damaged, dress nick(s) with a fine file or fine silicone sandpaper to remove burrs.

NOTE: If you need to replace the worm, refer to the *Parts* section for ordering information.

7. Separate the set collar from the worm by lightly tapping on the backside of the worm or wedge a thin flat screwdriver blade between the two parts and pry them apart.

8. Insert the spring pin in either the new worm on the set collar and then reassemble the two parts together. Slide the set collar and worm assembly over the end of the motor shaft until the front face of the worm is flush with the shoulder on the end of the shaft. Thread the hex nut back onto the end of the motor shaft.

9. Rotate the collar/worm assembly until the set screws are aligned with the two flats on the motor shaft and tight the two set screws found in the set collar against the motor shaft

   NOTE: If the worm gear is to be replaced, refer to *Replacing Worm Gear* in this section before installing the new motor.

10. Place the motor back on the bedplate by aligning the bolt slots in the motor mounting foot over the studs in the bedplate. Secure the motor with hex nuts. Snug the hex nuts but do not tighten the nuts until the worm on the end of the motor shaft has been aligned with the worm gear.

CAUTION: If worm is pitched inward or outward about the tangent point where the worm meshes with the worm gear teeth, the worm gear will be damaged. Misalignment of the worm and gear, in time, will cause damage and the beacon will stop rotating.

11. See Figure 8. Begin the initial worm (1) and worm gear (3) alignment by first moving the motor so that the worm begins meshing with the worm gear teeth. Center the worm vertically (4) with the worm gear.

    NOTE: If the worm is not centered on the worm gear, then the gear location must be either adjusted upward or downward until they are aligned. Refer to *Replacing Worm Gear* in this section, steps 8 and 9, for adjusting the clutch plate/worm gear assembly.

Replacing Motor *(contd.)*

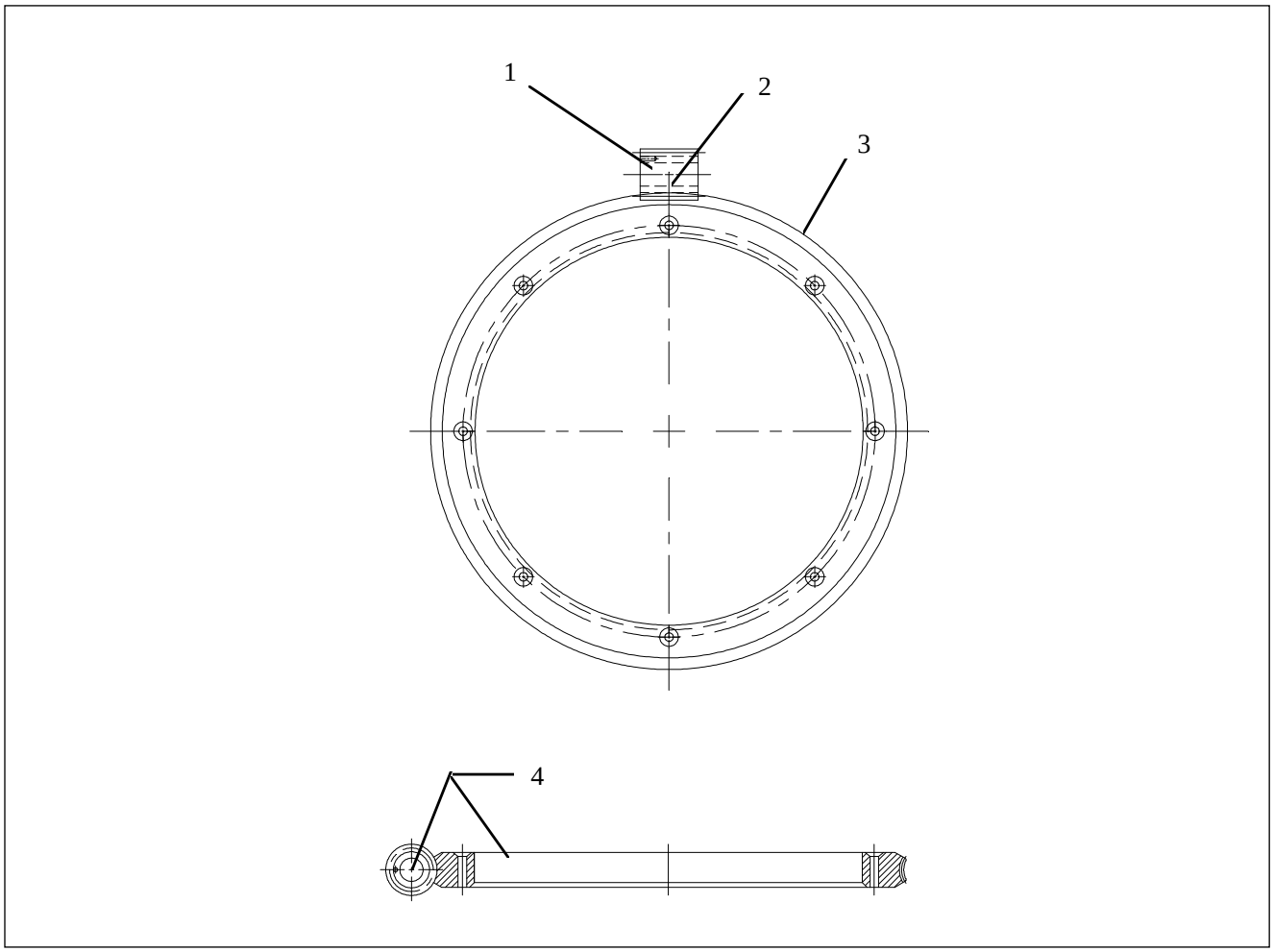

Figure 8. Worm Alignment

1. Worm
2. Worm Perpendicular to Worm Gear
3. Worm Gear
4. Worm Centered Vertically with Centerline of Worm Gear

12. Check the angle that the worm has with the worm gear. Move the motor until the worm is set perpendicular to the worm gear. Handtighten the hex nuts slightly to prevent any further movement. Recheck vertical and horizontal alignment between the worm and the worm gear. If correct, tighten the hex nuts. Recheck alignment. If worm is not properly aligned, loosen hex nut and realign hex nuts. Retighten hex nuts.

Replacing Motor *(contd.)*

13. Recheck that all set screws and hex nuts are tight. Apply a small amount of grease (Esso #325 or equal) to the worm gear.

Replacing Worm or Worm Gear

WARNING: Disconnect power to beacon before attempting to do any work. Failure to de-energize the beacon could result in serious injury or death by electrocution.

If the worm or worm gear needs to be replaced, refer to the *Parts* section for part numbers and contact your ADB Airfield Solutions representative. It is recommended that if either one of these parts is replaced, both the worm and worm gear be replaced at the same time. A service bulletin will be shipped with the part providing instructions for replacing the worm or worm gear. Request Service Bulletin ALN064.

NOTE: Replace gear in the maintenance shop. Make sure to remove the beacon head before turning the unit over.

To replace the worm gear, perform the following procedure:

1. See Figure 6. Remove the lower pan (6) by unlatching the four over-the-center latches. Place the pan out of the way to facilitate repair work.

   NOTE: While removing all necessary components to get to the worm gear, note the order and location of the respective parts. Keep all removed hardware.

2. See Figure 9. Look underneath the beacon assembly and locate the PRC mounting plate assembly (3). Reach under the plate and remove the two 90-degree disconnects (4) from the bottom terminals of the PRC. Take care in removing the terminals.

Replacing Worm or Worm Gear *(contd.)*

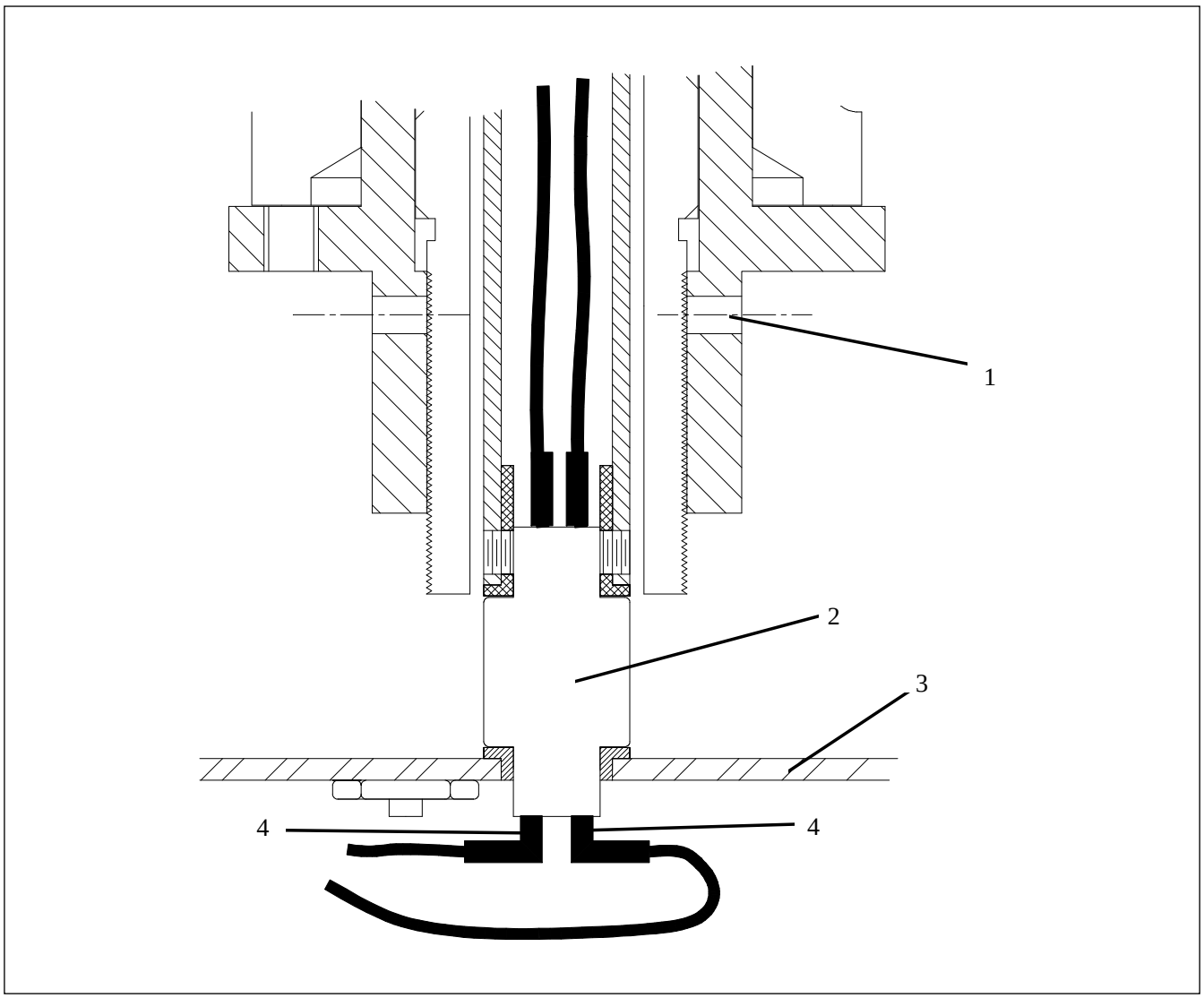

Figure 9. Removing Disconnects

1. Cross-Drilled Holes
2. PRC
3. Mounting Plate Assembly
4. 90-Degree Connectors

Replacing Worm or Worm Gear *(contd.)*

3. Pull straight down to remove the terminal.

CAUTION: Make sure you apply steady straight line pressure to the quick disconnects when making connections to either end of the PRC. Do not force disconnects onto the PRC terminals. Failure to apply straight-line force will induce excessive side forces that will break off the PRC terminal(s). Broken terminals cannot be repaired, and the entire PRC must be replaced.

4. Once both sets of the disconnects have been removed from their respective PRC terminals, loosen the two large hex nuts that hold the motor terminal block bracket to the PRC mounting plate. Slide the TB bracket out from under the hex nuts and allow the bracket to hang freely or tape it up to get it out of your way.

   NOTE: Before proceeding, prevent the spacers on each of the three threaded standoffs from falling off when the PRC mounting plate is removed by wrapping a continuous strip of duct tape or electricians tape around all three spacers that are located between the PRC mounting plate and the bedplate. Pull the tape tight to help wedge the spacers against their respective all-thread studs to prevent the spacers from falling off of the studs when the PRC mounting plate is removed. Failure to follow these instructions will cause additional work and may prevent the PRC from being remounted properly.

5. Now remove all three large hex nuts and remove the PRC mounting plate by applying downward pressure on the PRC plate assembly.

   NOTE: The PRC bushing in the plate assembly should remain in the plate and the PRC should remain attached to the power shaft assembly. In case the PRC is pulled out, refer to Replacing PRC in this section for instructions on how to reinstall the PRC.

6. See Figure 6. Remove the clutch plate/worm gear assembly (2) by locating the large hex brass nut (1) on top of the worm gear (3). Loosen and remove the long hex socket head cap screw found on the side of the hex.

7. Loosen the two set screws found on the side of the brass collar (4).

8. Take a barring device. such as a round steel rod or large screwdriver, and insert through both square slots found on the end of the brass collar. Turn collar counterclockwise to remove the assembly from the beacon shaft.

   NOTE: This assembly weighs approximately 15 pounds. Take precautions in handling and removing the assembly.

Replacing Worm or Worm Gear *(contd.)*

9. Once the clutch plate/worm gear assembly is removed, turn the assembly over and find and remove the #10-32 phillips flat head screws that secure the worm gear to the collar. Save the screws. Remove the worn/damaged worm gear from the assembly.

10. Place the new worm gear, with the countersunk screw holes facing up, onto the shoulder of the collar. Insert the #10-32 flat head screws into each of the screw holes in the face of the worm gear. First snug the screws across from each other to prevent the worm gear from being placed on a bind. Then finish tightening the screws in either a clockwise or counterclockwise rotation.

    NOTE: If the motor is to be replaced, proceed to *Replacing Motor* in this section before reinstalling the clutch plate/worm gear assembly.

11. Reinstall the clutch plate/worm gear assembly by performing the following procedure:

    a) Inspect the worm located on the end of the motor shaft, and the tooth profile for nicks, scratches, and thinned profile.

    b) If the worm profile has been damaged, dress nick(s) with a fine file or fine silicone sandpaper to remove burrs. If the profile has become thinned, replace the worm. Refer to *Replacing Motor* in this section for removal or replacement of the worm.

CAUTION: Do not loosen or remove the large brass hex nut (1) located on top of the steel clutch plate that is located in the center of the worm gear. If adjustment to the clutch plate is required, contact the ADB Airfield Solutions Engineering Department before proceeding. Improper tension on the clutch plate will prevent the beacon head from turning.

    c) See Figure 9. Note the location of the two taped holes (1) that have been cross-drilled through the thread found on the end of the beacon shaft. Align these cross drilled/tapped holes with the mating cross-drilled holes in the side of the brass collar.

    d) Position and slide the assembly over the end of the beacon shaft and start threading the assembly by hand onto the end of the beacon shaft. Finish tightening the assembly by inserting the barring device through the two slots on the end of the brass collar.

Replacing Worm or Worm Gear *(contd.)*

d) As you screw the assembly onto the end of the beacon shaft, check the alignment of the cross-drilled holes with their mating tapped holes by using a flashlight to see when the holes are aligned with each other. Once the holes are aligned, reinstall one of the set screws. If you cannot insert the set screw, turn the assembly clockwise or counterclockwise until the screw can be tightened.

e) Once the first set screw is installed properly, install and tighten the other set screw (located 180 degrees from the first set screw).

f) Reinstall and tighten the long socket head cap screw into the side of the large brass hex nut. Reconnect the PRC.

CAUTION: Make sure you apply steady straight-line pressure to the quick disconnects when making connections to either end of the PRC. Do not force disconnects onto the PRC terminals. Failure to apply straight-line force will induce excessive side forces that will break off the PRC terminal(s). Broken terminals cannot be repaired and the entire PRC must be replaced.

12. Reinstall the lower pan and latch all four latches.

Replacing Slip Clutch

Before replacing the slip clutch, adjust the slip clutch to increase clutch resistance. Refer to *Adjusting Slip Clutch* in the *Maintenance* section. If adjusting the slip clutch does not solve the problem, contact your ADB Airfield Solutions representative before attempting to replace the clutch assembly.

Replacing Power Rotary Connector

Remove power to beacon. If beacon has been in operation, allow sufficient time for the interior temperatures of beacon and the lamp to cool down before attempting to make any modifications. Failure to remove power may expose operator to serious harm or electrocution. Failure to allow lamp and interior surfaces to cool may cause burns when hot components are touched.

If the power rotary connector (PRC) becomes inoperative and needs to be replaced, refer to the *Parts* section for the part number and contact your ADB Airfield Solutions representative. A service bulletin will be shipped with the power rotary connector providing instructions on removing and remounting the motor. Request Service Bulletin ALN074.

NOTE: Before replacing the PRC unlatch and remove the lower bucket that covers the motor and associated components. Removal of one or both access doors may be helpful but is not mandatory to facilitate the replacement of the PRC.

Removing PRC

To remove a PRC, perform the following procedure:

1. See Figure 10. Open the optical head access door (1) located on the opposite side where the ballast is located. Unscrew and remove the lamp from the socket. Place the lamp in safe place to protect it from being broken.

Do not touch lamp with bare hands. Handling the lamp directly can shorten lamp life. Use cloth gloves or other appropriate protection while removing the lamp.

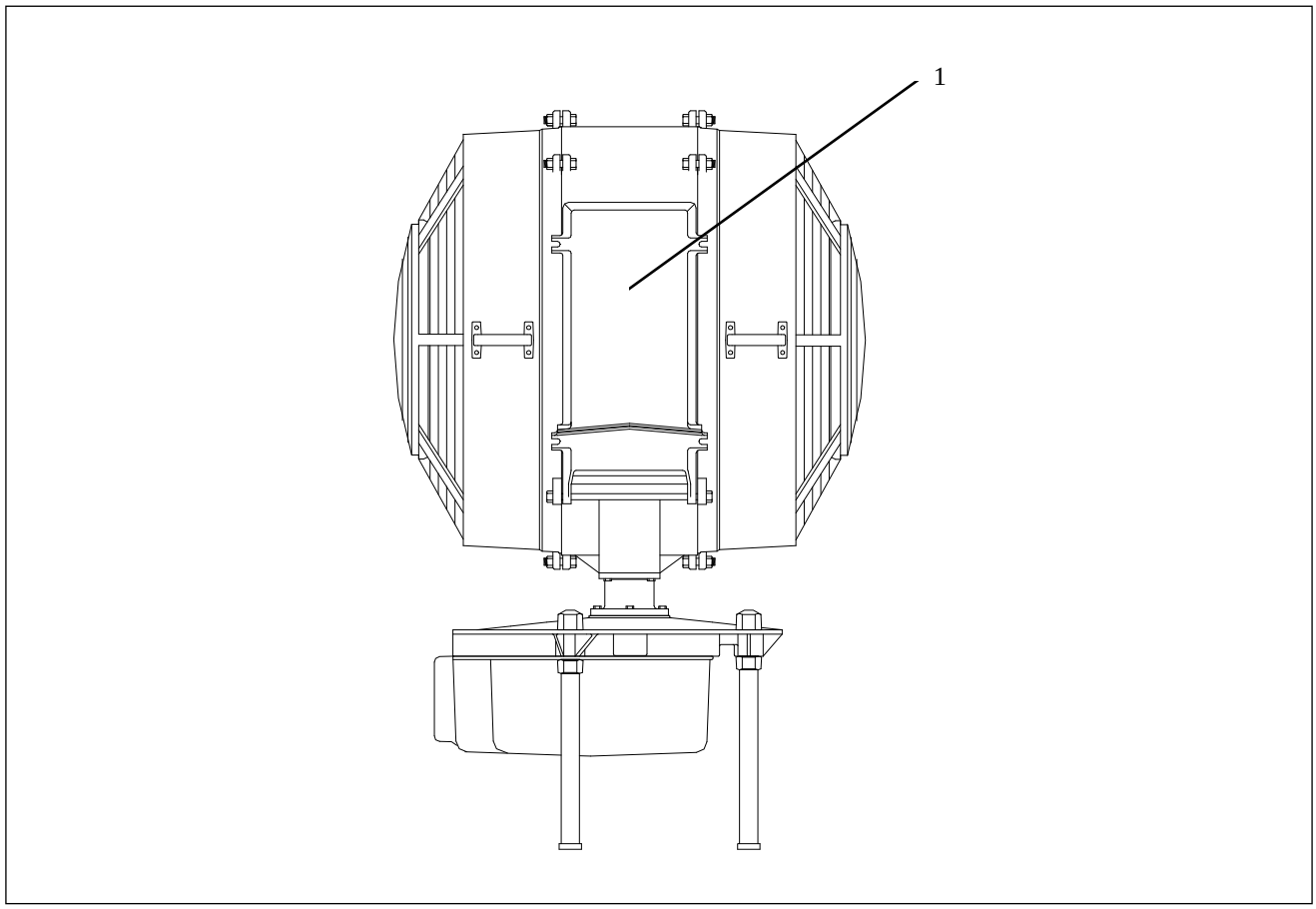

Figure 10. Optical Head Access Door (1)

Removing PRC *(contd.)*

2. See Figure 11. Open the other access door and remove the screws securing the ballast heatshield (3) and remove the shield.

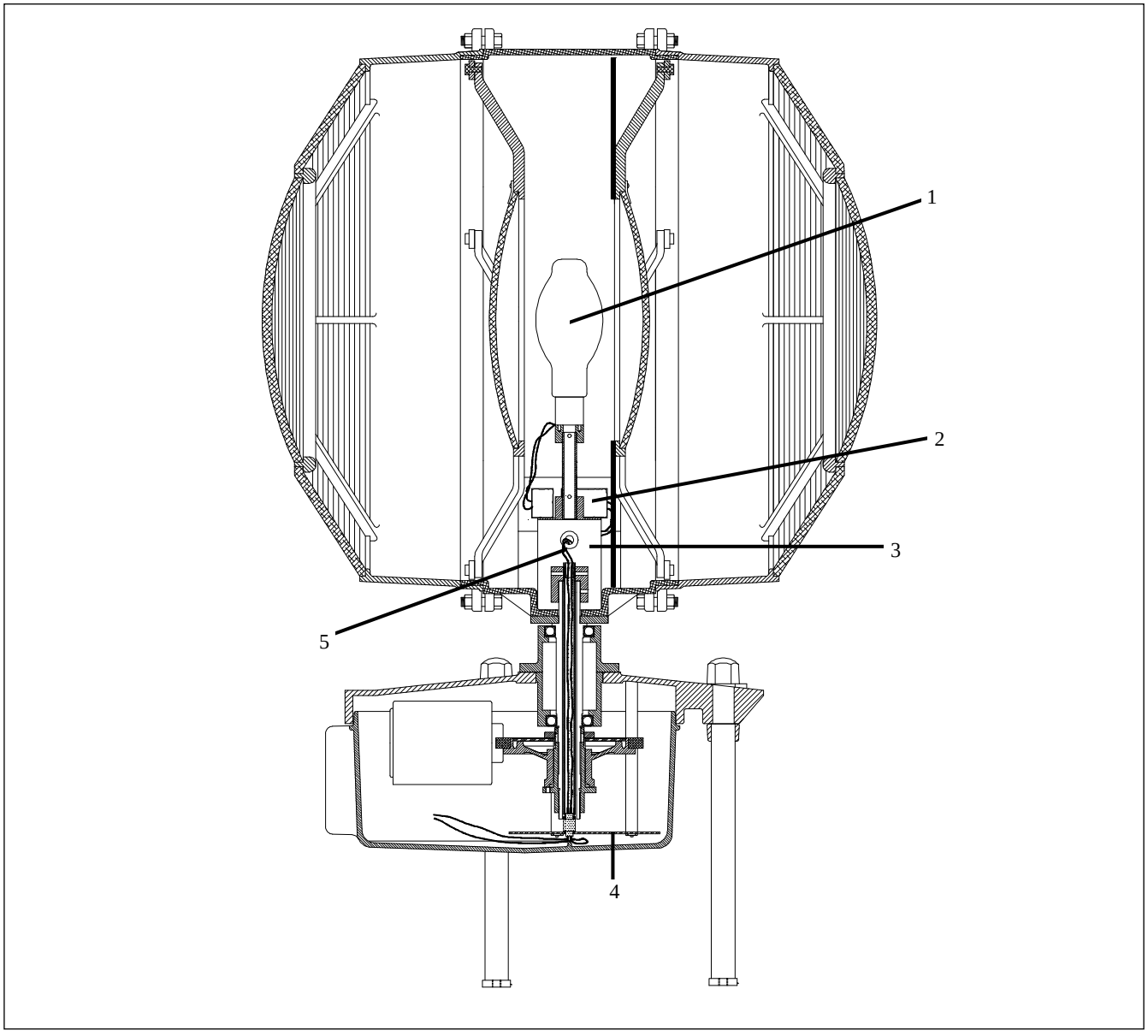

Figure 11. Removing Shield

1. Lamp
2. Ballast
3. Ballast Heatshield
4. PRC Mounting Plate Assembly
5. PRC Wire Leads

Removing PRC *(contd.)*

3. Disconnect the two PRC wire leads (5) that come up through the PRC shaft, at the terminal block. Remove any wire tie wraps that have been used to dress these two wires.

4. Look underneath the beacon assembly and locate the PRC mounting plate assembly (4).

5. See Figure 9. Reach under the plate and remove the two 90-degree disconnects (4) from the bottom terminals of the PRC.

6. Loosen the two large hex nuts that hold the motor terminal block bracket to the PRC mounting plate. Slide the TB bracket out from under the hex nuts and allow it to hang freely or tape it up to get out of your way.

CAUTION: Before proceeding, prevent the spacers on each of the three threaded standoffs from falling off when the PRC Mounting Plate is removed by wrapping a continuous strip of duct tape or electricians tape around all three spacers that are located between the PRC mounting plate and the bedplate. Pull the tape tight to help wedge the spacers against their respective all thread studs to prevent the spacers from falling off of the studs when the PRC Mounting Plate is removed. Failure to follow these instructions will cause additional work and may prevent the PRC from being mounted properly.

7. Remove all three large hex nuts and remove the PRC mounting plate.

   NOTE: The PRC remains attached to the power shaft assembly at this point.

8. See Figure 12. Loosen the two upper set screws (1) in the side of the PRC adapter collar that secures the power shaft and PRC adapter collar together. This allows the power shaft assembly to drop so that the two small set screws (5) that hold the PRC to the shaft are accessible. Loosen the two set screws, located 180 degrees apart, and then pull the PRC out of the plastic bushing found at the end of the shaft.

   NOTE: Do not remove the bushing unless it is cracked or damaged.

Removing PRC *(contd.)*

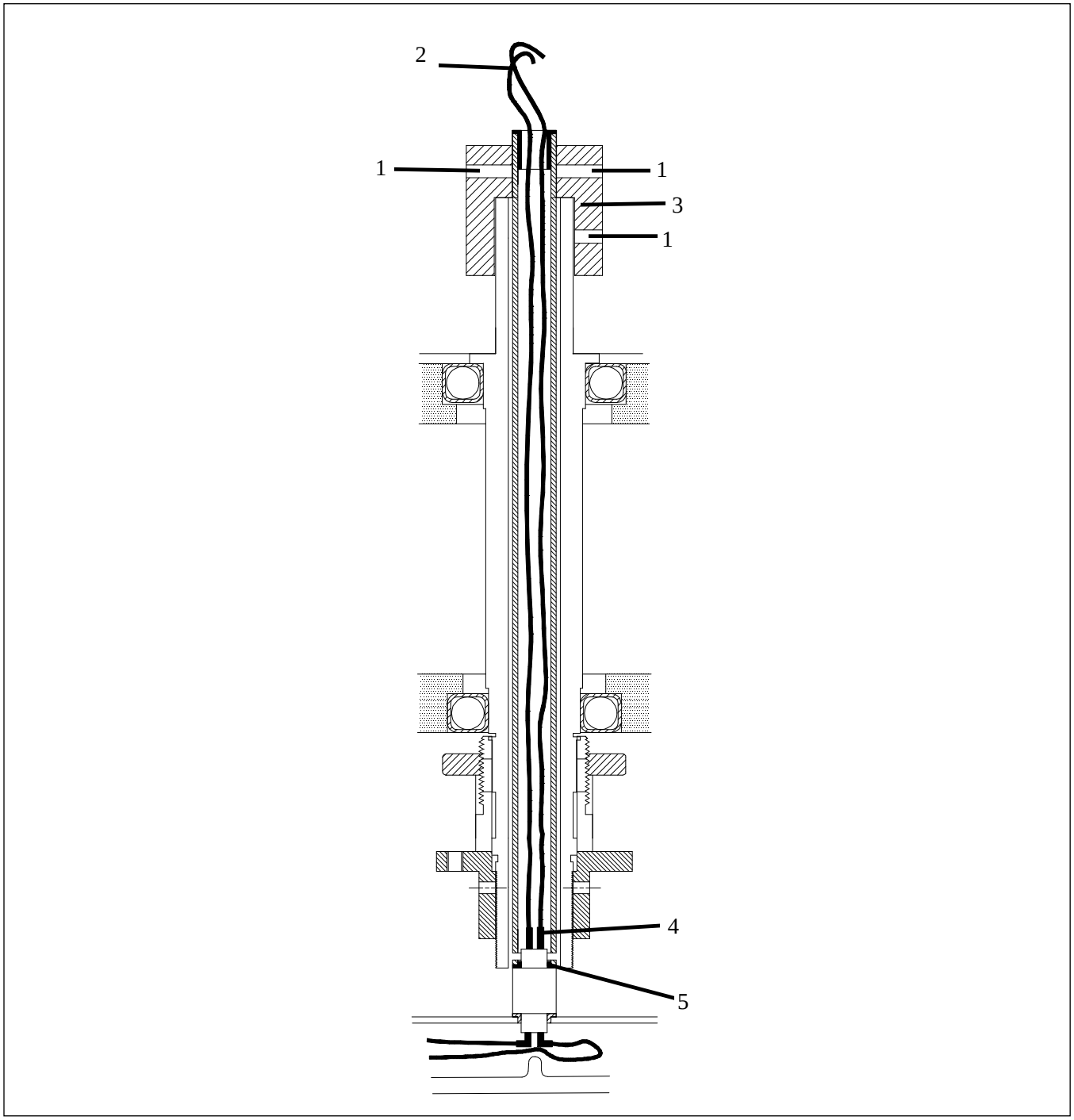

Figure 12. Power Shaft Assembly

1. Upper Set Screws
2. Wire Leads to Ballast
3. Collar
4. Straight Disconnects
5. Set Screws

Removing PRC *(contd.)*

9. Remove the two straight disconnects (4) attached to the upper terminals of the PRC. Inspect the two straight push-on disconnects for damage and determine if they must be replaced. If disconnects must be replaced, cut them off the wires and install new disconnects. Disconnects must be crimped onto the ends of the wire.

Replacing PRC

WARNING: The PRC **must** be installed with the symbol 

pointing up to operate. Failure to install the PRC upright will cause the PRC to fail.

Ensure you apply steady straight line pressure to the quick disconnects when making connections to either end of the Power Rotary Connector (PRC). Do not force disconnects onto the PRC terminals. Failure to apply straight-line force will induce excessive side forces that will break off the PRC terminal(s). Broken terminals can not be repaired and the entire PRC must be replaced.

To replace a PRC, perform the following procedure:

1. After pulling the two wire leads down through the power shaft assembly to create a small amount of slack in the wires, be sure that the PRC has been turned so that it is orientated with the imprinted 

symbol, found on the side of the PRC body, is pointing up.

CAUTION: When installing the two straight disconnects to the PRC terminals, note that the PRC terminals are off - centered in the sleeve and that the insulation sleeve on the disconnect has a flat side. Orientate the flat side of insulation sleeve on the first disconnect is facing toward the other terminal space on the PRC. Install the second disconnect so that its flat side is facing the other terminal spade. Failure to follow these instruction will could result in breaking off one or both of the terminal spades from the PRC. Broken terminal spades cannot be repaired.

Replacing PRC *(contd.)*

2. Push, with straight-line force, the two straight disconnects on to the terminals found on the top of the PRC. Once terminals are attached, push the PRC back into the bushing found on the inside of the power shaft.

3. Tighten the two set screws to secure the PRC to the power shaft.

CAUTION: Failure to make set screws tight will allow the power shaft slip and cause the wires connected to the PRC to twist and then break causing power to be terminated to the lamp. However, do not overtighten set screws. Overtightening will crack outer PRC terminal sleeve and the epoxy poured around the terminals. Damage to either/both the sleeve and terminals will cause the PRC to fail overtime.

4. See Figure 12. Push the power shaft assembly back up inside the collar. Retighten the two set screws found in the side of the collar to secure the shaft to the collar.

CAUTION: Ensure that the set screws in the collar are tight. Failure to make set screws tight will allow the Power Shaft slip and cause the wires connected to the PRC to twist and then break causing power to be terminated to the lamp.

5. Remove the slack in the wires by gently pulling on the wires on the opposite end of the PSA.

6. See Figure 11. Turn the plate so that the shoulder on the PRC bushing (pre-installed in the plate at the factory) will be against the PRC when the plate is installed. Slip the PRC mounting plate assembly (4) over the three all-thread studs and secure with the three hex nuts. Thread the nuts on just enough to keep the plate from falling off the studs.

7. Bring the mounting plate up against the PRC and push the bushing onto the PRC. The fit between the PRC bushing ID is a snug fit. Once the PRC is seated into the bushing, finger tighten the three hex nuts up against the bottom of the plate. Remove the duct tape from around the three spacers.

   NOTE: To install the PRC mounting plate, you may need to adjust the PRC Shaft. When the PRC is installed properly in the end of the PRC shaft and the two set screws are tightened, the location of the set screws will be either at the very end of the beacon shaft or can be slightly up inside of the shaft.

Replacing PRC *(contd.)*

8. If required, push up the PRC shaft assembly. This is accomplished by loosening the two 1/4-20 hex head set screws used hold the shaft in the large collar on the other end of the shaft located in the beacon head and push the shaft assembly upward.

9. Reinstall the terminal block mounting bracket onto the two appropriate studs by loosening the hex nuts just enough so that you can slip bracket between the hex nut and the underside of the mounting plate.

CAUTION: Do not place the terminal block bracket between the top of the plate and the spacer. Failure to follow this instruction will result in placing the PRC on a bind and will prevent it from turning.

10. Tighten all three hex nuts so that the PRC mounting plate is secure against each of the three Spacers.

11. Reinstall the two 90-degree disconnects to the terminals on the bottom of the PRC. The two 90-degree disconnects must be turned in opposite direction. See Figure 13 before pushing them onto the PRC terminals. Failure to turn them in opposite directions may cause at least one of the terminals on the PRC to break off.

CAUTION: Make sure you apply steady straight line pressure to the quick disconnects when making connections to either end of the PRC. Do not force disconnects onto the PRC terminals. Failure to apply straight-line force will induce excessive side forces that will break off the PRC terminal(s). Broken terminals cannot be repaired and the entire PRC must be replaced.

12. See Figure 6. Return to the beacon head and reinstall the lamp and reconnect the two PRC leads to the terminal block in the beacon head. Reinstall the ballast shield and tighten hardware.

CAUTION: Do not touch lamp with bare hands. Handling the lamp directly can shorten lamp life. Use cloth gloves or other appropriate protection while removing the lamp.

Replacing PRC *(contd.)*

13. Recheck all wiring connections and make sure all hardware is tight. Use wire tie wraps and dress all wires. Make sure all wires are not in contact with any sharp edges. Check fuses to ensure they have not blown.

14. Reinstall the bucket and any access doors that were removed.

15. Energize beacon to verify operation. The metal halide lamp has a cold start strike of approximately 5 minutes before it reaches full intensity.

Replacing Lamp

If the lamp needs to be replaced, refer to the *Parts* section for the part number and contact your ADB Airfield Solutions representative. A service bulletin will be shipped with the lamp providing instructions on replacing the lamp. Request Service Bulletin ALN074.

WARNING: The filter and lamp temperatures can be in excess of 375 °F (191 °C). Turn the beacon off and allow to cool down for at least one hour before touching filters or lamps. Failure to observe this warning may result in personal injury or equipment damage.

WARNING: Metal halide lamps can cause serious burn and eye inflammation from short wave ultra-violet radiation if the outer envelope of the lamp is broken or punctured when the lamp is energized. Do not remain for more than a few minutes near the lamps when they are energized unless adequate shielding or other safety precautions are used.

CAUTION: Wear clean, lint-free gloves while handling a new lamp. Touching the lamp with bare fingers may seriously shorten lamp life. If the lamp has been touched, wipe it carefully with a piece of lens-cleaning tissue or similar material moistened with isopropol alcohol.

7. Parts

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

Using the Illustrated Parts List

The Item column numbers correspond to the numbers that identify parts in illustrations following each parts list. NS (not shown) indicates that a listed part is not illustrated.

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.

The Part Number column gives the ADB Airfield Solutions part number.

Item	Description	Part Number	Note
NS	Assembly	xxxxxxxx	A
T1	Assembly		
	Part	xxxxxxxx	
	Part	xxxxxxxx	

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

L-802A Rotating Beacon Part Numbering System

Refer to Table 5 to determine the part number for a particular L-802A rotating beacon.

Table 5. L-802A Part Numbers

L-802A Rotating Beacon	Part Number
With L-810 obstruction light	44D2069-410
Without L-810 obstruction light	44D2069-420

L-802A Rotating Beacon Parts List

See Figure 13.

Item	Description	Part Number	Note
1	Filter lens clip	60C2045	
2	Doublet		
	Clear inner doublet	63A0603	
	Green inner doublet	63A0630	
3	Ballast, with capacitor	35A0490	
4	Upper filter shield	60B2243	
5	Spider support for inner doublet	62D0649	
6	1000 W metal halide lamp	48A0337	
7	Lamp adjustment stem	60B2274	
8	Lens sector fastener for 20-inch (508 mm) lens	62D0651	
9	Lower filter shield	60B2243	
10	Lens sector fastener for 36-inch (914.4 mm) lens	62D0650	
11	Outer sectors		
	30-degree outer sectors, left	63A0632	
	30-degree outer sectors, right	63A0631	
12	Clear outer doublet	63A0604	
13	Lamp socket	49A0136	
14	Upper bearing	75A0022	
15	Shaft assembly	60C1189	

L-802A Rotating Beacon
Parts List *(contd.)*

Item	Description	Part Number	Note
16	Lower bearing	75A0021	
17	Cap nut	62C0625	
18	Retaining nut	62C0627	
19	Power rotary connector (PRC)	76A0012	
20	Worm, brass	68A0014	
21	Worm (ring) gear, phenolic	68A0012	
22	Motor	69C0012	
23	Lamp socket assembly	44B4653	
24	Lamp socket base	60C2010	
25	Shaft bushing	60B2193	
26	Power shaft coupling	60B2194	
27	PRC power shaft	60B2196	
28	Straight disconnect, insulated	70A0492	
29	Power rotary bushing, installed in the PRC end of the shaft	60B2192	
30	Power rotary connector (PRC) bushing for mounting plate	60B2277	
31	Right angle (90 degree) disconnect, insulated	70A0329	
32	PRC mounting plate	60B2195	
NS	Fuse, 5A, motor	47A0130	
NS	Fuse, 15A, lamp	47A0175	
NS	L-810 single obstruction light assembly	44C1005-1	
NS	L-810 lamp 69 W 120 Vac	48A0009	
NS	L-810 lens, red	63A0149	
NS	L-810 lens gasket	63B0015	
NS: Not Shown			

L-802A Rotating Beacon
Parts List *(contd.)*

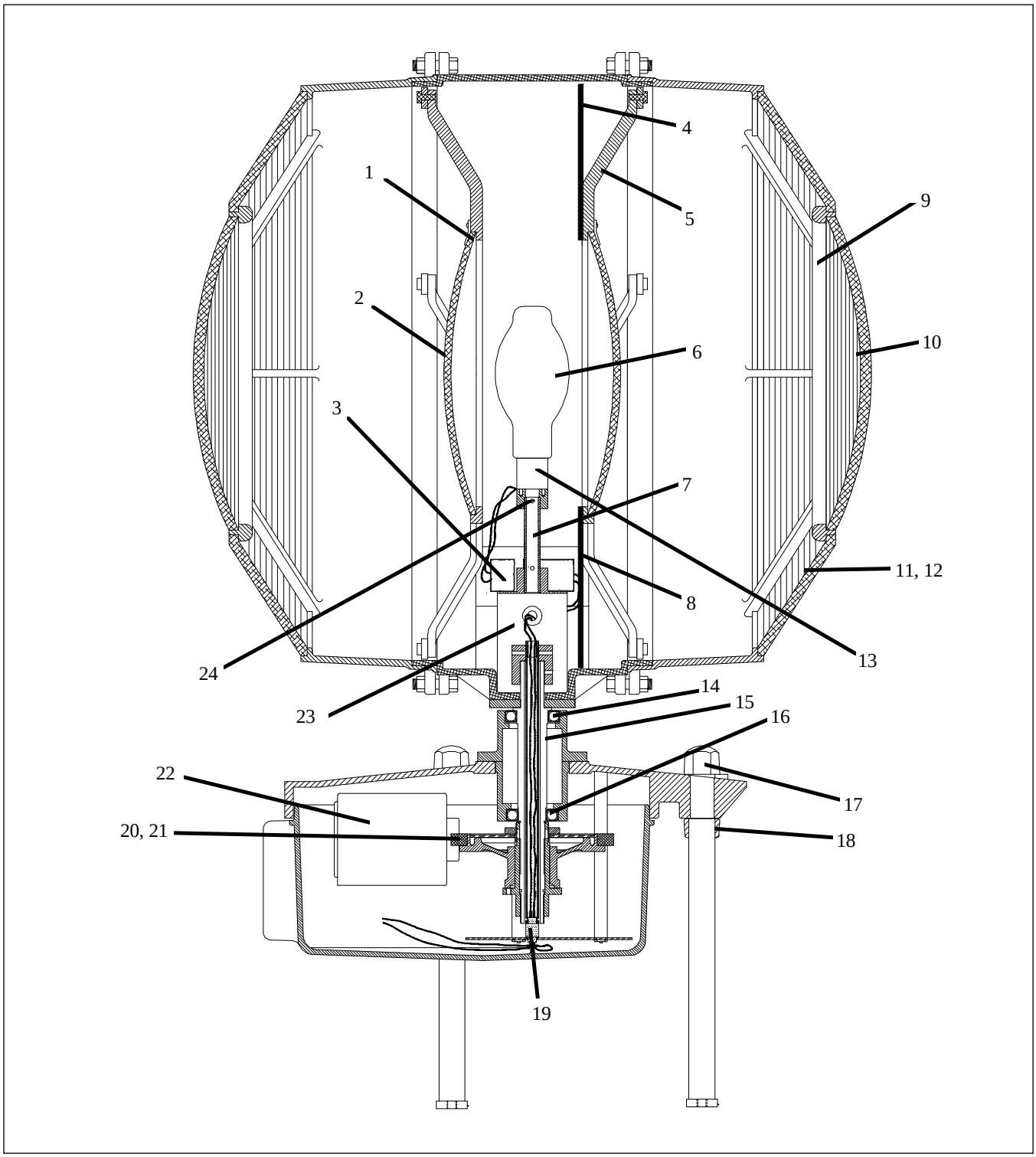

Figure 13. L-802A 36-Inch Rotating Beacon (Part 1 of 2)

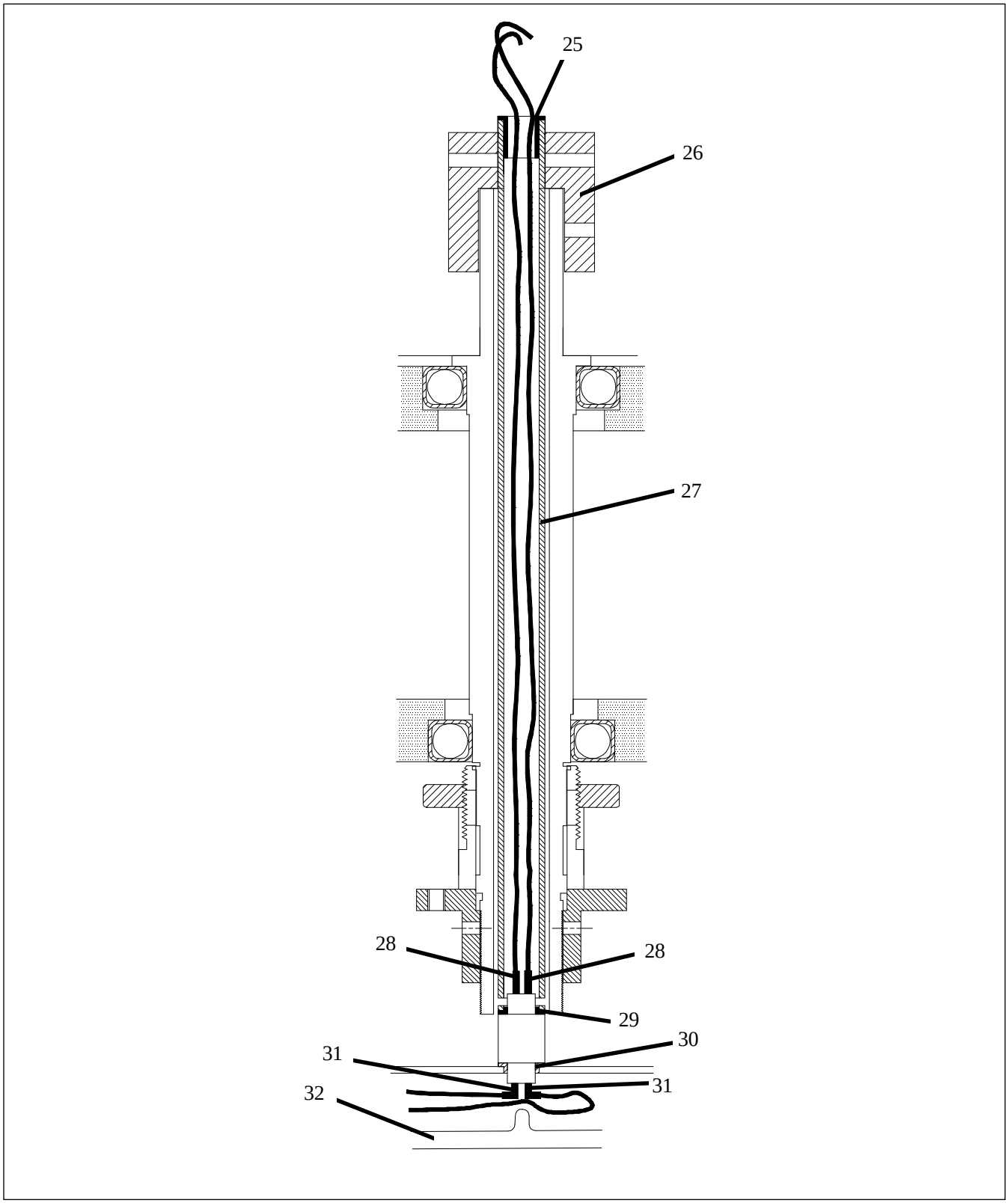

Figure 13. L-802A 36-Inch Rotating Beacon (Part 2 of 2)

8. Wiring Schematics

See Figure 14. This section provides internal wiring schematics for the L-802A rotating beacon.

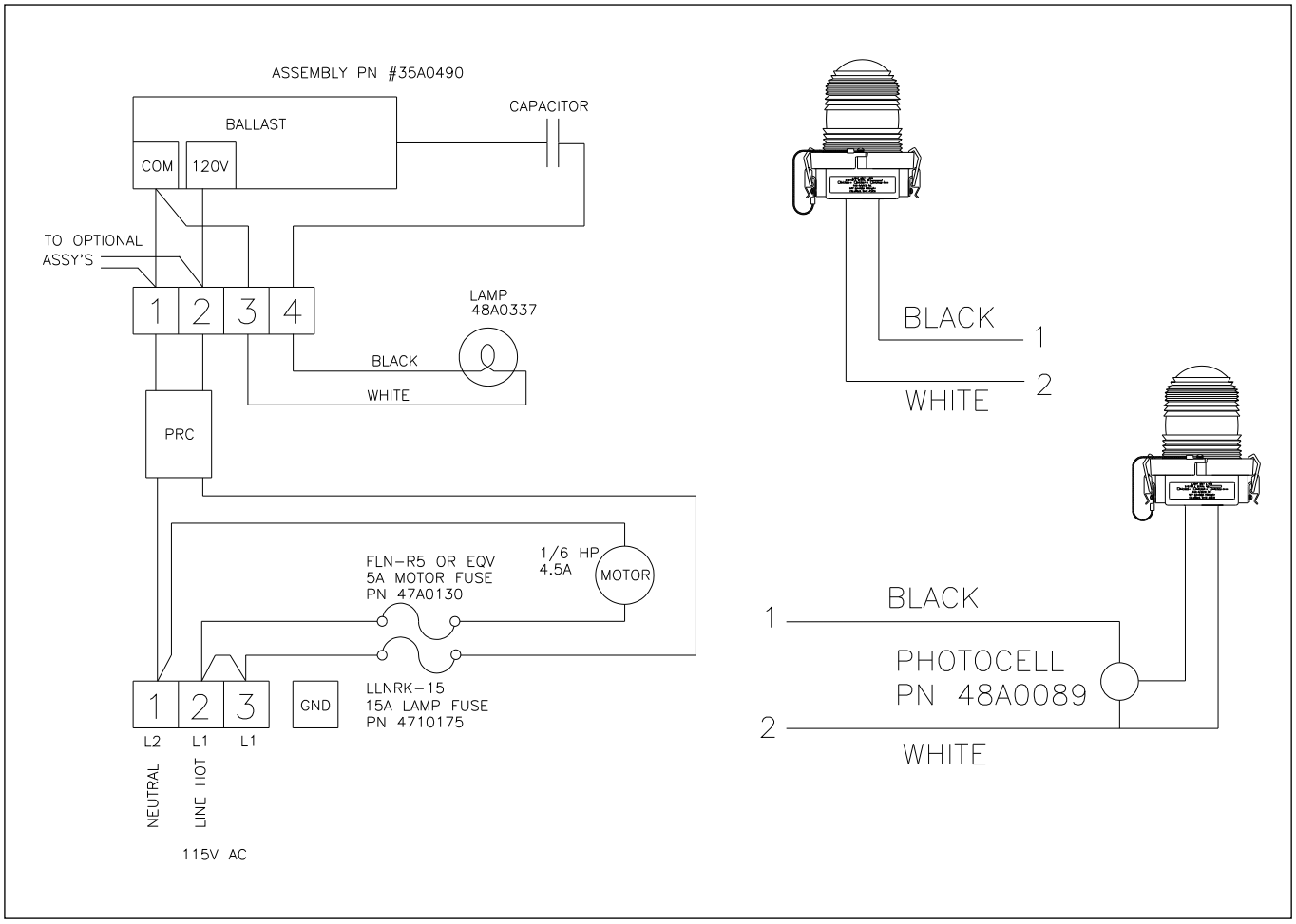

Figure 14. Internal Wiring Schematic