



VERTICAL EXPRESS

# LED Downlight Ceiling Fixtures



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## Safety Precautions

### IMPORTANT!

**Read this page before any work is performed on elevator equipment. The procedures contained in this manual are intended for the use of qualified elevator personnel. In the interest of your personal safety and the safety of others, do not attempt any procedure that you are not qualified to perform.**

All procedures must be accomplished in accordance with the applicable rules in the latest edition of the National Electrical Code, the latest edition of ASME A17.1, and any governing local codes.

### Terms in This Manual



**CAUTION** statements identify conditions that may result in damage to the equipment or other property if improper procedures are followed.



**WARNING** statements identify conditions that may result in personal injury if improper procedures are followed.

### General Safety



**Before applying power to the controller, check that all factory wire connections are tight on relays, contactors, fuse blocks, resistors, and terminals on cards and DIN rail terminals. Connections loosened during shipment may cause damage or intermittent operation.**

Other specific warnings and cautions are found where applicable and do not appear in this summary. See the *Elevator Industry Field Employees' Safety Handbook* for electrical equipment safety information on installation and service.

### Electrical Safety

All wiring must be in accordance with the National Electrical Code and be consistent with all state and local codes.

#### Use the Proper Fuse

To avoid fire hazards, use only a fuse of the correct type, voltage, and current rating. See the job specific drawings sheet (Power Supplies) for fusing information.

Electric shocks can cause personal injury or loss of life. Circuit breakers, switches, and fuses may not disconnect all power to the equipment. Always refer to the wiring diagrams. Whether the AC supply is grounded or not, high voltage will be present at many points.

#### Printed Circuit Cards

Printed circuit boards may be damaged if removed or installed in the circuit while applying power. Before installation and/or removing printed circuit boards, secure all power.

Always store and ship printed circuit cards in separate static bags.

**Electrical Safety***(continued)***Mainline Disconnect**

Unless otherwise directed, always Turn OFF, Lock, and Tag out the mainline disconnect to remove power from elevator equipment. Before proceeding, confirm that the equipment is de-energized with a volt meter. Refer to the *Vertical Express Employees' Safety and Accident Prevention Program Manual* for the required procedure.

**Test Equipment Safety**

Always refer to manufacturers' instruction book for proper test equipment operation and adjustments.

Megger or buzzer-type continuity testers can damage electronic components. Connection of devices such as voltmeters on certain low level analog circuits may degrade electronic system performance. Always use a voltmeter with a minimum impedance of 1M Ohm/Volt. A digital voltmeter is recommended.

**When Power Is On**

To avoid personal injury, do not touch exposed electrical connections or components while power is ON.

**Mechanical Safety**

See the *Elevator Industry Field Employees' Safety Handbook* for mechanical equipment safety information on installation and service.

## Static Protection Guidelines

### IMPORTANT!

#### Read this page before working with electronic circuit boards.

Elevator control systems use a number of electronic cards to control various functions of the elevator. These cards have components that are extremely sensitive to static electricity and are susceptible to damage by static discharge.

Immediate and long-term operation of an electronic-based system depends upon the proper handling and shipping of its cards. For this reason, the factory bases warranty decisions on the guidelines below.

### Handling

- Cards shipped from the factory in separate static bags must remain in the bags until time for installation.
- Anti-static protection devices, such as wrist straps with ground wire, are required when handling circuit boards.
- Cards must not be placed on any surface without adequate static protection.
- Only handle circuit cards by their edges, and only after discharging personal static electricity to a grounding source. DO NOT touch the components or traces on the circuit card.
- Extra care must be taken when handling individual, discrete components such as EPROMS (which do not have circuit card traces and components for suppression).

### Shipping

- Complete the included board discrepancy sheet.
- Any card returned to the factory must be packaged in a static bag designed for the card.
- Any card returned to the factory must be packaged in a shipping carton designed for the card.
- “Peanuts” and styrofoam are unacceptable packing materials.

**Note:** Refer to the Vertical Express Replacement Parts Catalog to order extra static bags and shipping cartons for each card.

**Failure to adhere to the above guidelines will VOID the card warranty!**

### Arrival of Equipment


#### Receiving

Upon arrival of the equipment, inspect it for damage. Promptly report all visible damage to the carrier. All shipping damage claims must be filed with the carrier.

#### Storing

During storage in a warehouse or on the elevator job site, precautions should be taken to protect the equipment from dust, dirt, moisture, and temperature extremes.

#### Revision Change Bars



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## Specifications

### Power Supply

- Single-phase low voltage with dimmer
- Input voltage: 100 - 277v  $\pm$ 10%
- Output voltage: 24v, Max. 4.16A
- Auto reset: short circuit and overload protection

### Power Supply Harness

- 1 cable, 42" length, male connector on one end, (normal lighting)
- 1 cable, 42" length, female connector on one end, (emergency lighting)

### Light Fixture (6 or 9)

- Stainless steel or black
- 4.3W 12-48v LED lamp
- 12" lamp harness

### Car Top Light Fixture Harness

- 6-light normal: 228" length
- 9-light normal: 480" length
- Emergency lighting: 54" length

## Installation

### Car Top Assembly

The car top assembly is shipped with installed light fixtures.

1. Install the car top assembly on the cab.
  - a. Locate the cab light and emergency light harnesses (shipped loose). See Figure 1.
  - b. Route these harnesses from under car top to the power supply enclosure on top of the car.
2. Locate the plug on the end of the lamp fixture wiring harness (which is already connected to the lamp).
3. Connect these harnesses to the downlight. See Figure 2 on page 9 for this and all steps in the following procedure.

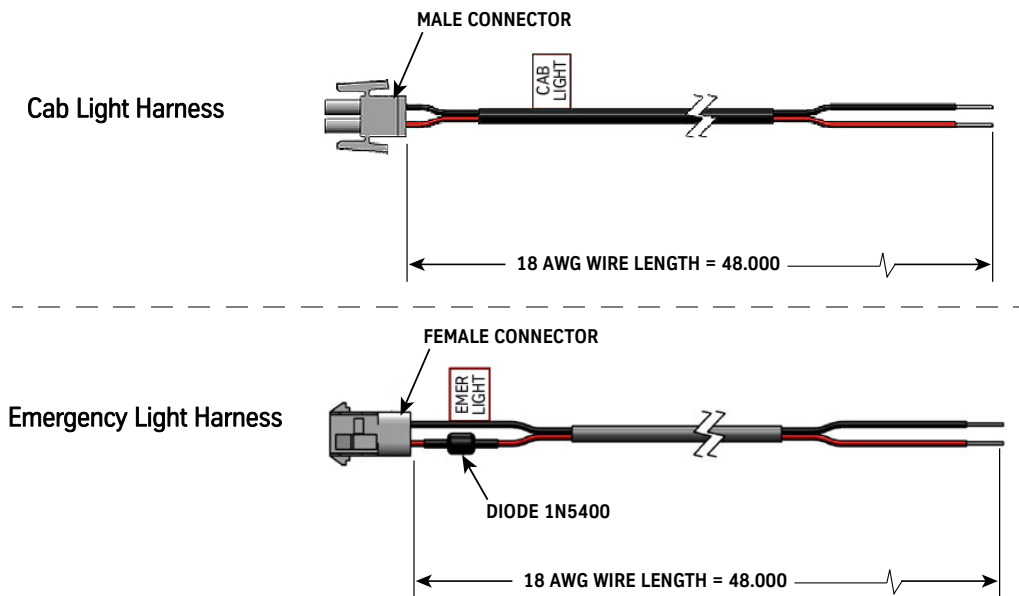


Figure 1 - Power Supply Harnesses

### Power Supply with Harness

1. Locate the power supply, the two (2) #8 self-tapping screws, and the flexible conduit.
  2. Use the #8 self-tapping screws to attach the power supply to the car top.
  3. Drill or punch a .875" diameter hole in the car top.
  4. Attach one end of the flexible conduit coming from the power supply.
  5. Turn OFF, Lock, and Tag out the disconnect that is supplying power to the L10 and L20 supply.
  6. Attach the two stripped wires (L10 Black - L20 White) to the LT terminals in the swing return.
  7. Route the two cables from the terminals to the LED lamp fixtures.
- Note:** There is only one cable if a car top emergency light is not installed.
8. Connect the connector of the cable to the connector of the lamp fixture wiring harness.
  9. Turn ON the disconnect supplying power to the L10 and L20 supply.

## Power Supply with Harness

(continued)

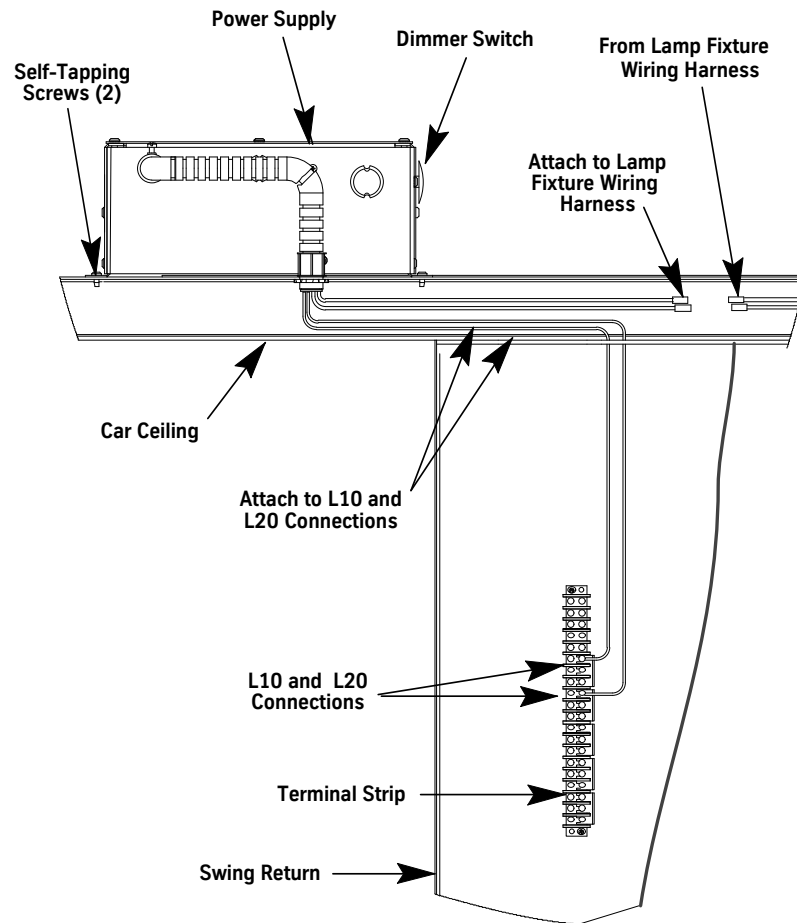


Figure 2 - Power Supply with Harness

## Adjustment

1. Turn the dimmer switch to the full ON position, and verify that all of the lamps are on full brightness. See Figure 3.
2. Turn the dimmer switch until the desired lighting is acquired.

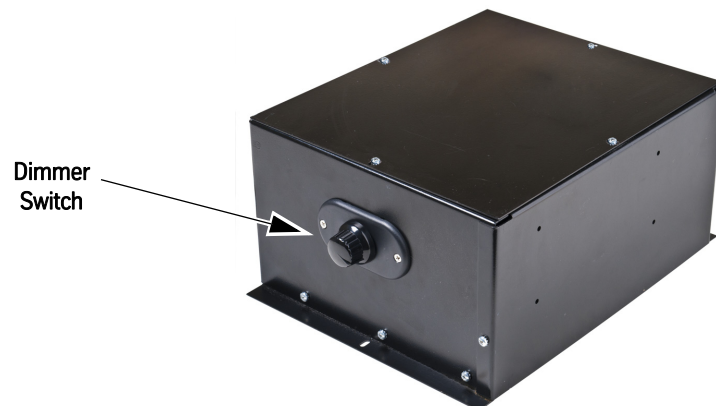
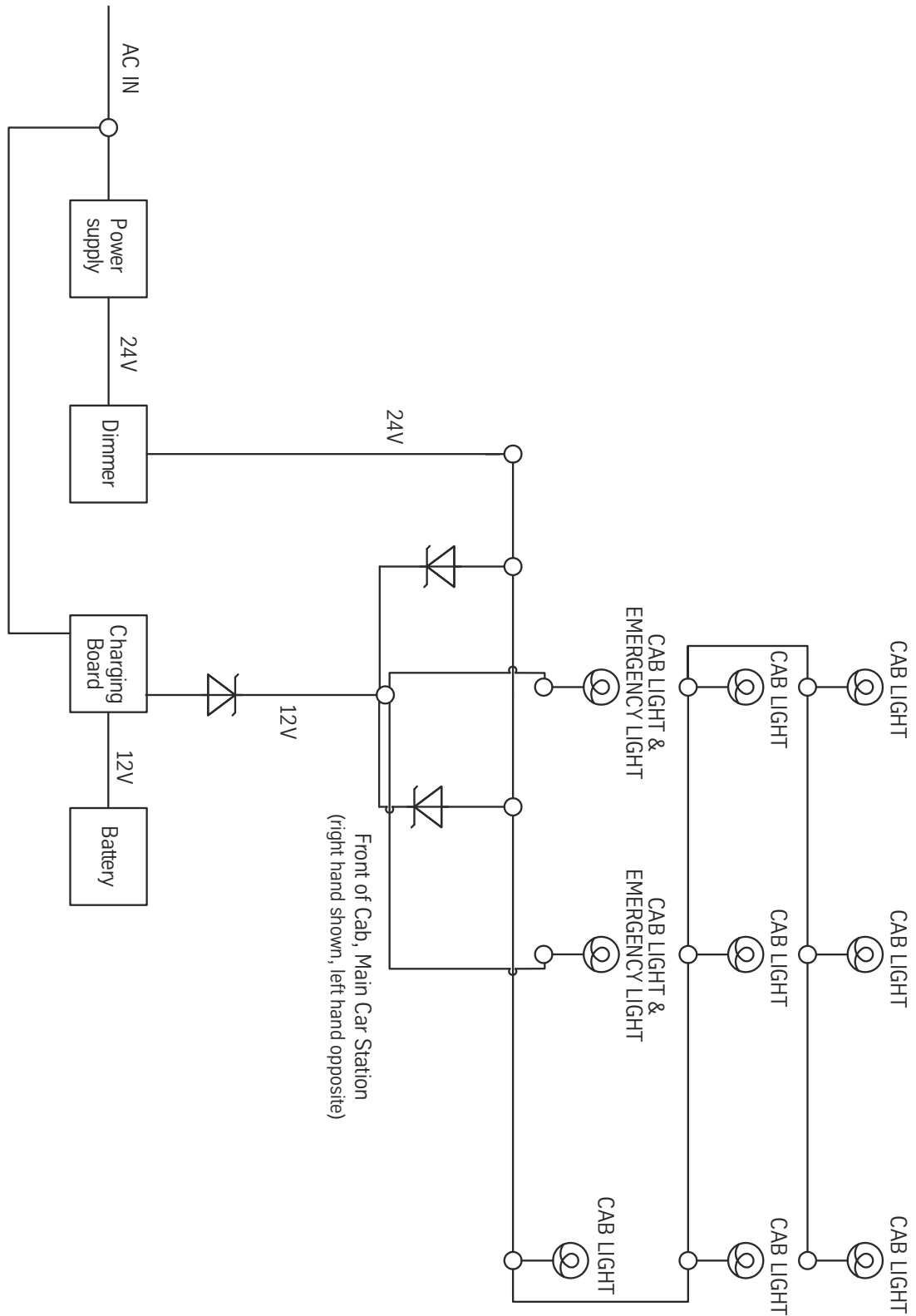


Figure 3 - Dimmer Switch

# Wiring



**Figure 4 - Wiring Diagram Example**  
**(typical 9-light system with emergency lighting integrated in the cab lighting system)**

## Wiring

(continued)

Line	Signal Name	From	To	Assembly	H / L	Notes
1	L10	LT (DIN Rail Term)	Driver Unit	Wire on Driver Unit	H	Connect Black Wire from Driver Unit
2	L20	L20 (DIN Rail Term)	Driver Unit		H	Connect White Wire from Driver Unit
3	DC IN+	Driver Unit	DC IN+ (DIN Rail Term)		L	Connect Red Wire from Driver Unit
4	DC IN-	Driver Unit	DC IN- (DIN Rail Term)		L	Connect Blue Wire from Driver Unit
5	DC IN+	DC IN+ (DIN Rail Term)	DC IN (Dimmer)	Wire on Dimmer Unit	L	Connect Red Wire (DC IN) from Dimmer
6	DC IN-	DC IN- (DIN Rail Term)	DC IN (Dimmer)		L	Connect Black Wire (DC IN) from Dimmer
7	CLT+	DC OUT (Dimmer)	CLT+ (DIN Rail Term)		L	Connect Red Wire (DC OUT) from Dimmer
8	CLT-	DC OUT (Dimmer)	CLT- (DIN Rail Term)		L	Connect White Wire (DC OUT) from Dimmer
9	DC IN+	DC IN+ (DIN Rail Term)	Field will Connect to Car Station Terminals	462YD001	L	Required if Dimmer Switch is Remote Mounted in Car Station
10	DC IN-	DC IN- (DIN Rail Term)			L	
11	CLT+	CLT+ (DIN Rail Term)			L	
12	CLT-	CLT- (DIN Rail Term)			L	

**Table 1 - LED Downlight Wiring Diagram**

**Wiring**  
*(continued)*

Line	Signal Name	From	To	Assembly	H / L	Notes
1	L10	LT (DIN Rail Term)	Driver Unit	Wire on Driver Unit	H	Connect Black Wire from Driver Unit
2	L20	L20 (DIN Rail Term)	Driver Unit		H	Connect White Wire from Driver Unit
3	DC IN+	Driver Unit	DC IN+ (DIN Rail Term)		L	Connect Red Wire from Driver Unit
4	DC IN-	Driver Unit	DC IN- (DIN Rail Term)		L	Connect Blue Wire from Driver Unit
5	DC IN+	DC IN+ (DIN Rail Term)	DC IN (Dimmer)	Wire on Dimmer Unit	L	Connect Red Wire (DC IN) from Dimmer
6	DC IN-	DC IN- (DIN Rail Term)	DC IN (Dimmer)		L	Connect Black Wire (DC IN) from Dimmer
7	CLT+	DC OUT (Dimmer)	CLT+ (DIN Rail Term)		L	Connect Red Wire (DC OUT) from Dimmer
8	CLT-	DC OUT (Dimmer)	CLT- (DIN Rail Term)		L	Connect White Wire (DC OUT) from Dimmer
9	L OUT+	L OUT+ (Emergency Light Charging Board)	ELT+ (DIN Rail Term)	900AM19	L	Red Wire
10	L OUT-	L OUT- (Emergency Light Charging Board)	ELT- (DIN Rail Term)	900AM19	L	Black Wire
11	BATT+	BATT+ (Emergency Light Charging Board)	Battery+	900AM18	L	Red Wire
12	BATT-	BATT- (Emergency Light Charging Board)	Battery-	900AM18	L	Black Wire
13	L10	L10 (Emergency Light Charging Board)	L10 (DIN Rail Term)	900AD1	H	—
14	L20	L20 (Emergency Light Charging Board)	L20 (DIN Rail Term)	900AD2	H	—
15	DC IN+	DC IN+ (DIN Rail Term)	Field will Connect to Car Station Terminals	462YD001	L	Required if Dimmer Switch is Remote Mounted in Car Station
16	DC IN-	DC IN- (DIN Rail Term)			L	
17	CLT+	CLT+ (DIN Rail Term)			L	
18	CLT-	CLT- (DIN Rail Term)			L	

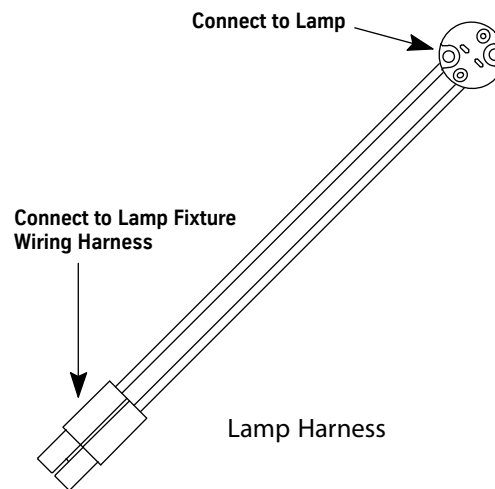
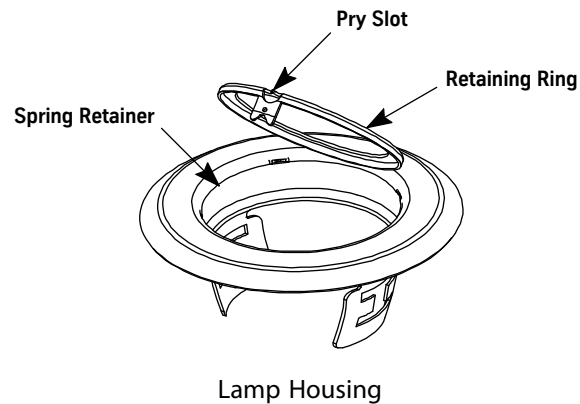
**Table 2 - LED Downlight with Emergency Power Wiring Diagram**

## Maintenance

### Replace Bulb

1. While holding the bulb in place, use a small, flathead screwdriver to gently pry open the retaining ring at the pry slot. See Figure 5.

**Note:** Take care when using metal tools with stainless steel surfaces as not to scratch the stainless material. It is recommended to wrap the end of the screwdriver with a soft cloth to protect the stainless surface.



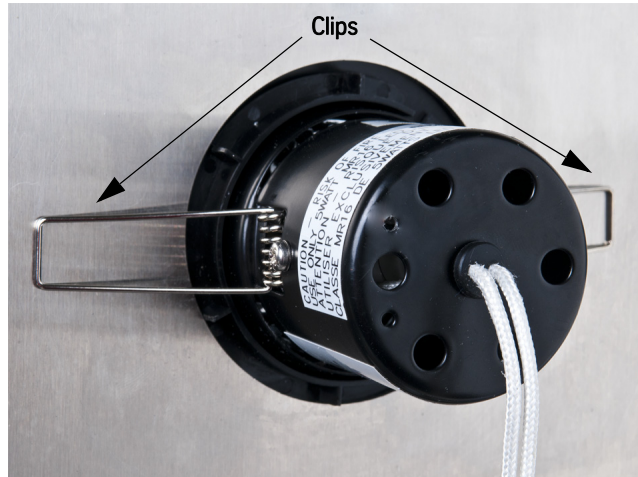
**Figure 5 - Lamp Fixture Assembly**

2. Pull the bulb down a few inches, and expose the lamp harness.
3. Disconnect the bulb from the lamp harness.
4. Connect the new bulb to the lamp harness.
5. Push the new bulb up into the fixture until it is against the spring retainer.
6. Snap the retaining ring back into place.

**Note:** Make certain that the bulb is in front of the spring retainer. The spring retainer holds the bulb snug against the retaining ring and prevents rattling.

## Replace Lamp Housing

1. Remove the bulb.
2. Gently pull the lamp housing away from the cab top, pushing back the clips which hold the housing in place. See Figure 6.



**Figure 6 - Back Side of Lamp Assembly**

3. To prevent the clips from striking fingers, restrain the spring clips before pulling the assembly completely through the hole.
4. Pull the housing down until the spring clips come through the ceiling.
5. Disconnect the lamp harness.
6. Hold the clips back on the new lamp housing, and place the spring clips through the hole on the housing.
7. Release the clips, and push the housing against the ceiling (to hold the lamp housing in place).
8. Install the bulb.

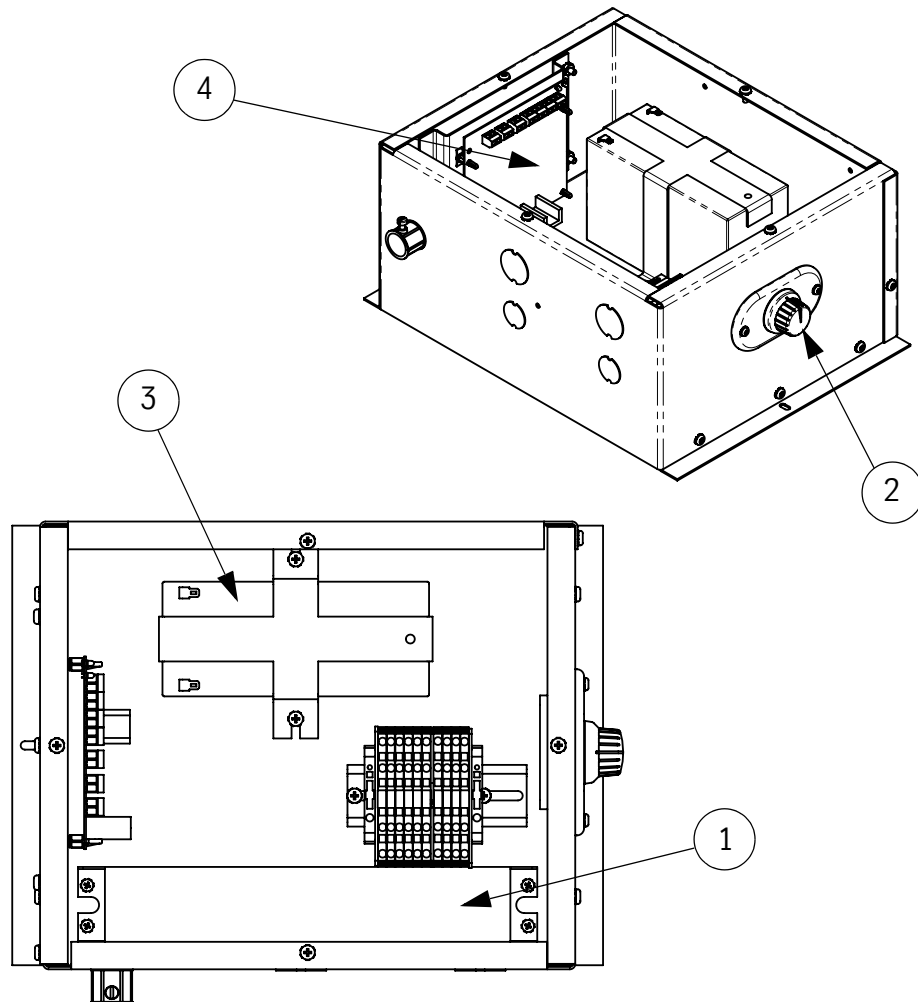
## Troubleshooting

Problem	Cause	Solution
Lamp is rattling.	Excessive movement of bulb.	Make sure the bulb is mounted in the lamp housing in front of the spring retainer, and the retaining ring is securely fastened.
Lamp is not illuminating.	No power to bulb.	Make sure that the bulb is securely connected to the harness, and all connectors are plugged together.
	Bad bulb.	Replace the bulb.
The set of lamps are not illuminating. All lamps are not illuminating.	Dimmer switch setting.	Turn the dimmer switch to full ON, and adjust from there.
	No power on L10 - L20 terminals.	Check L10 - L20 terminals for connection problems.
	Defective power supply.	Test the transformer for 24v output.
	Defective dimmer switch.	Test the dimmer switch.



## Replacement Parts

### Cab Top Assembly (cover removed)

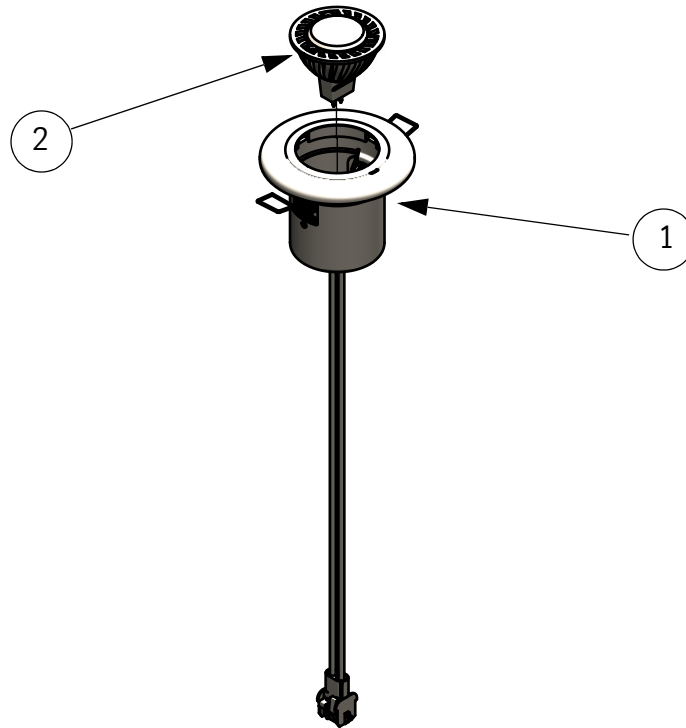


ITEM	PART NO.	PRINT NO.	DESCRIPTION
1		672DC001	Power Supply, 100W Input, 100-277 VAC Output, 24VDC
2		171HT001	Switch, Low Voltage LED Dimmer, 24V
3		116AB4	Battery SLA 12V, 7.0 Ah
4		6300AEF001	Card, Emergency Light Charging

**Replacement Parts**

*(continued)*

**Downlight Kit**



- 200BXM001 Kit, Black, 6 lights
- 200BXM002 Kit, Black, 9 lights
- 200BXM003 Kit, Stainless Steel, 6 lights
- 200BXM004 Kit, Stainless Steel, 9 lights

ITEM	DESCRIPTION
1	Kit, MR16 LED Bulb with Harness Assembly
2	Light Emitting Diode (LED)



**Vertical Express**

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