



# Sun™ Rack Service Manual

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# Preface

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This document describes how to remove and replace the field replaceable parts in a Sun Rack and contains some troubleshooting information for isolating faults.

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## Sun Rack Service

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All service procedures must be performed by qualified service personnel.

Read the *Sun Rack Safety and Compliance* document before attempting any service procedures.

There are four types of field-replaceable units in the Sun™ Rack:

- Power sequencers
- Power strips
- Cable harnesses
- Top panel

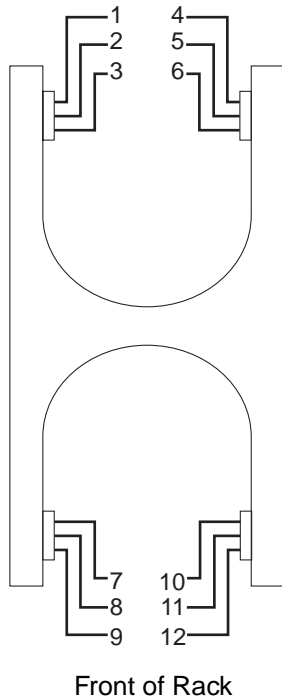
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## Preparing the Rack for Service

Some maintenance tasks require that the panels be removed from the Sun Rack.

### Removing the Grounding Straps

There are three grounding straps mounted to each corner of the top of the rack frame. FIGURE 1-1 and TABLE 1-1 identify which straps are connected to which panels. Before removing any panel, the grounding strap must be disconnected from the panel.



**FIGURE 1-1** Top View of Rack Frame Showing Grounding Strap Terminals

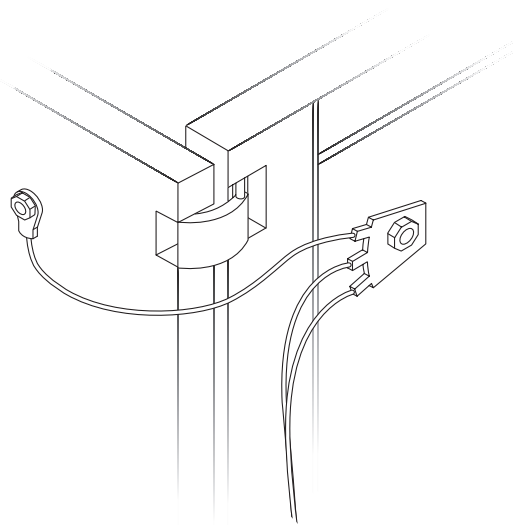
**TABLE 1-1** Grounding Strap Connections

Rack Terminal	Grounding Strap Number	Connected to:
Rear Left	1	Left extension panel
	2	Left side panel
	3	Rear door if hinged on left
Rear Right	4	Right extension panel
	5	Top panel
	6	Rear door if hinged on right
Front Left	7	Front door if hinged on left
	8	not used
	9	not used



**TABLE 1-1** Grounding Strap Connections

<b>Rack Terminal</b>	<b>Grounding Strap Number</b>	<b>Connected to:</b>
Front Right	10	Right side panel
	11	Front door if hinged on right
	12	not used



**FIGURE 1-2** Typical Grounding Strap Connection

## Removing a Side Panel

- 1. Disconnect the grounding strap from the stud on the top inside of the panel.**
- 2. Release two latches on the bottom inside of the panel.**
- 3. Pull the bottom of the panel slightly away from the rack and lift up the panel.**

## Removing an Extension Panel

1. **Disconnect the grounding strap from the stud on the top inside of the panel.**
2. **Lift the panel up slightly and slide it toward the front of the rack.**

To hold the panel in place, a tab attached to the panel slides into a bracket on the rack side. There are two of these tabs and brackets, one at the top of the panel and one at the bottom.

## Removing the Top Panel

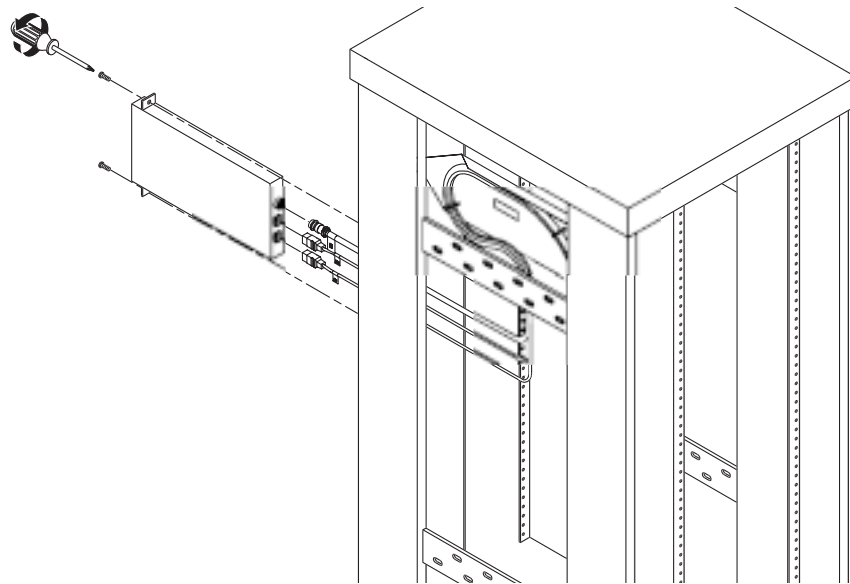
1. **Disconnect the grounding strap from the stud on the top inside of the panel.**
2. **Disconnect the top panel power supply power cord from power strip.**
3. **Remove the logo panel from the top front of the rack, or if your Sun Rack has a front door, open the door.**
4. **Loosen the four screws that secure the top panel to the rack.**
5. **Slide the top panel toward the front of the rack and lift it up to remove it from the rack.**

To replace the top panel, reverse the order of the removal procedure.

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## Removing and Replacing a Power Sequencer

1. Loosen captive screws on the front of the power sequencer.
2. Pull the power sequencer part of the way out of the rack.
3. Disconnect three cables from the rear panel of the power sequencer.
4. Pull the power sequencer free from the cables and out of the rack.



**FIGURE 1-3** Removing a Power Sequencer

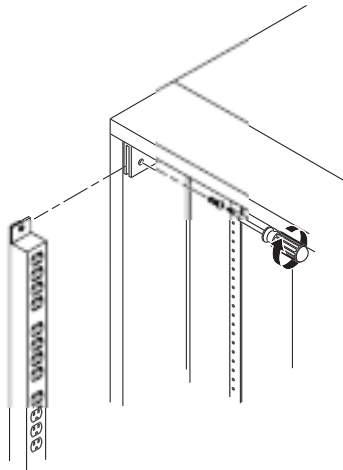
To replace a power sequencer, reverse the steps of the power sequencer removal procedure.

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## Removing and Replacing a Power Strip

In order to remove the inner power strip, you must first remove the outer power strip (the one closer to the back of the rack). The removal procedure for both power strips is the same.

1. **Disconnect the cable from the bottom of the power strip.**
2. **Loosen the retaining screw at the top of the power strip and pull the top of the power strip toward the back of the rack.**
3. **Pull the power strip up and out so that the tab at the bottom of the power strip clears the bracket.**



**FIGURE 1-4** Power Strip

To replace a power strip, reverse the steps of the power strip removal procedure.

To replace the inner power strip, the outer power strip must be removed.

---

# Removing and Replacing a Cable Assembly

## Removing a Cable Assembly

1. Disconnect the cable harness to be removed from its power strip.
2. On the power sequencer side of the rack, remove the side panel, the power strip bracket cover, the power strip bracket, and both power strips.

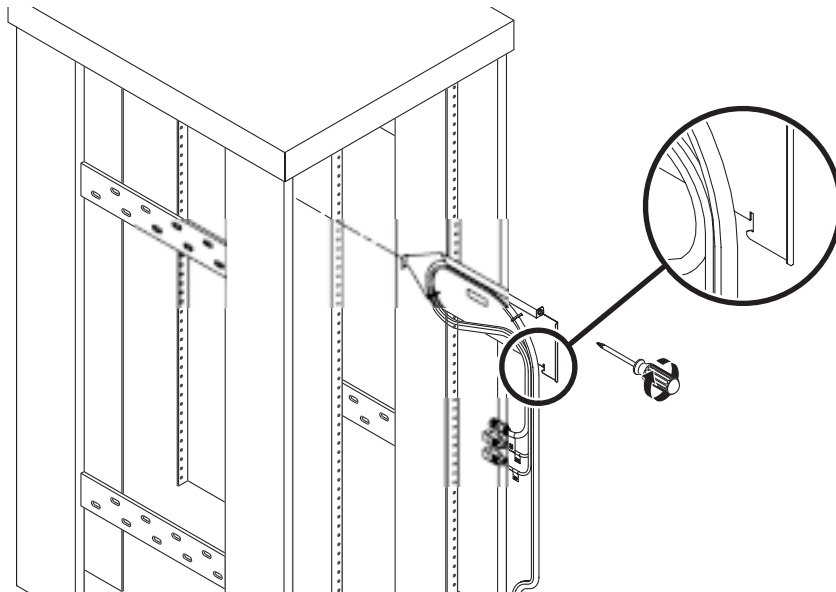


FIGURE 1-5 Cable Harness

3. Disconnect the cable harness from the power input panel.
  - a. Remove two screws holding the power input panel to the rack.
  - b. Remove one screw that holds the connector cluster to the power input panel assembly.
4. Disconnect the cable harness from the power sequencer.
  - a. Loosen two screws on the front panel of the power sequencer.

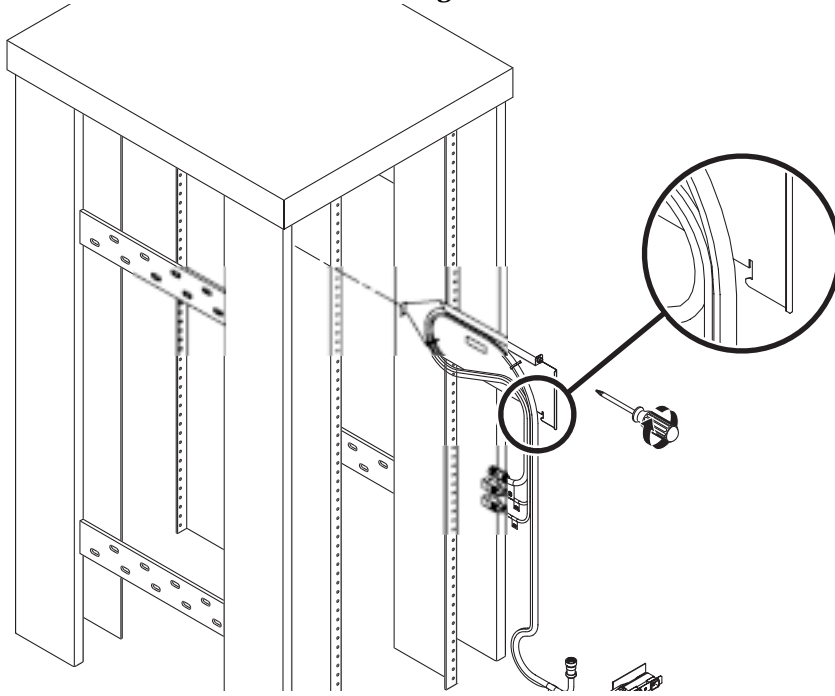
- b. **Pull the power sequencer out the front of the rack.**
- c. **Disconnect the cable harness from the three connectors on the power sequencer. Set the power sequencer aside.**
5. **Loosen the screw that holds the cable harness carrier plate to the rack.**
6. **Lift up the rear of the carrier plate so the notch clears the edge on which it is seated.**
7. **Pull the carrier plate and cable harness out the back of the rack.**

## Replacing a Cable Assembly

Each cable harness consists of three cables bundled together on a carrier plate. Viewed from the back of the rack, the cable harnesses and power sequencers are mounted on the left side of the rack. The lower cable harness (B) is shorter than the upper harness (A). Each cable carrier plate is installed in the slot above its respective sequencer. It is more convenient to install the cables for the lower sequencer (B) first.

1. **Remove the rack side panel, the power strip bracket cover, and the power strip bracket.**

2. Holding the carrier plate, pass the cable bundle through the space between the outer frame and the rack mounting rail.



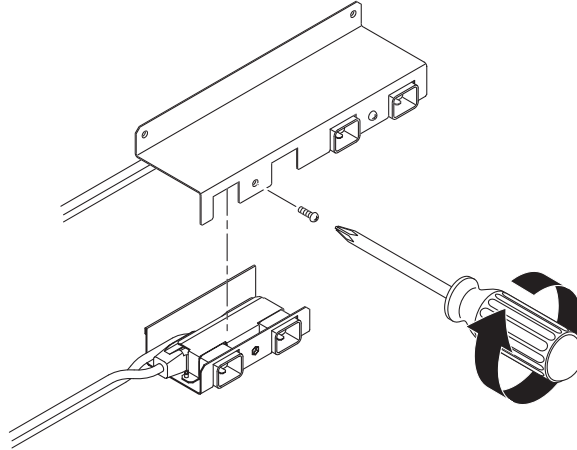
**FIGURE 1-6** Cable Harness and Carrier Plate

After the cable ends are inserted, insert the carrier plate and push it forward toward the front of the rack. As you slide the carrier plate in, the front end is guided by a vertical channel on the front cover plate.

As the carrier is close to being fully inserted, a small tab on its bottom edge aligns with a slot in the channel to position the carrier to the right. As this tab fully engages a small vertical slot in the carrier plate engages and allows the carrier to drop into its final position. At this point tighten the captive screw.

3. Repeat Step 2 for the upper cable harness (A).

**4. Attach the two connector clusters to the power input panel.**



**FIGURE 1-7** Attaching Connector Clusters to the Power Input Panel

Mount the lower cable harness cluster (B) on the right side of the input panel.

Position each cluster under the power input panel with the open side up. The cables are positioned on the left side of the power input panel. The connectors engage with the slots in the front surface. Secure each cluster with a single screw between the two connectors.

While attaching the left-hand cluster (A) to the power input panel, ensure that the cluster supports the two cables from the right-hand cluster (B).



5. Attach the input power panel to the rack with two 8 mm screws, split washers, and flat washers.

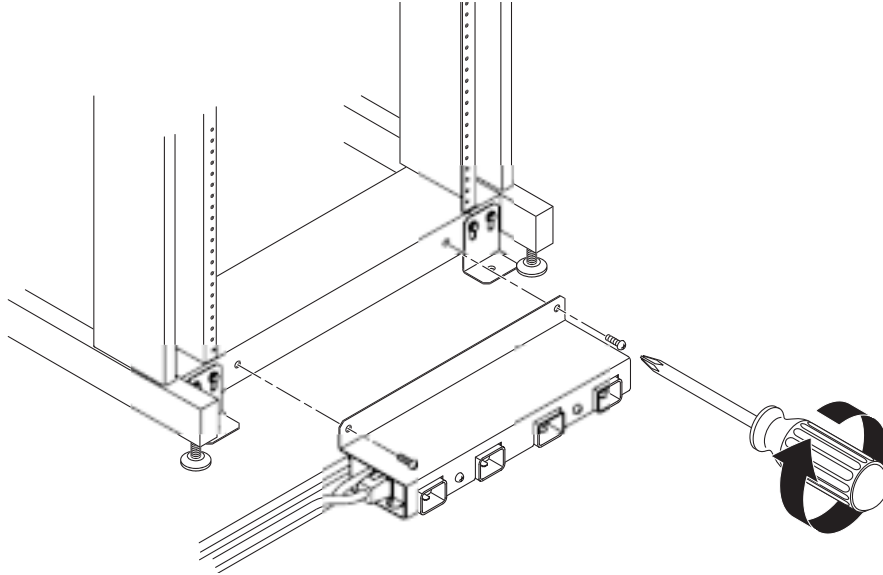


FIGURE 1-8 Attaching the Power Input Panel to the Rack

6. Reinstall the power strip mounting bracket and the power strip mounting bracket cover.



# Troubleshooting

## Power Sequencer

FIGURE 2-1 shows only one AC circuit in a power sequencer. There are four of these circuits for the odd (1-7) outlet groups and five more for the even (0-8) outlet groups. Outlet Group 9 is unswitched.

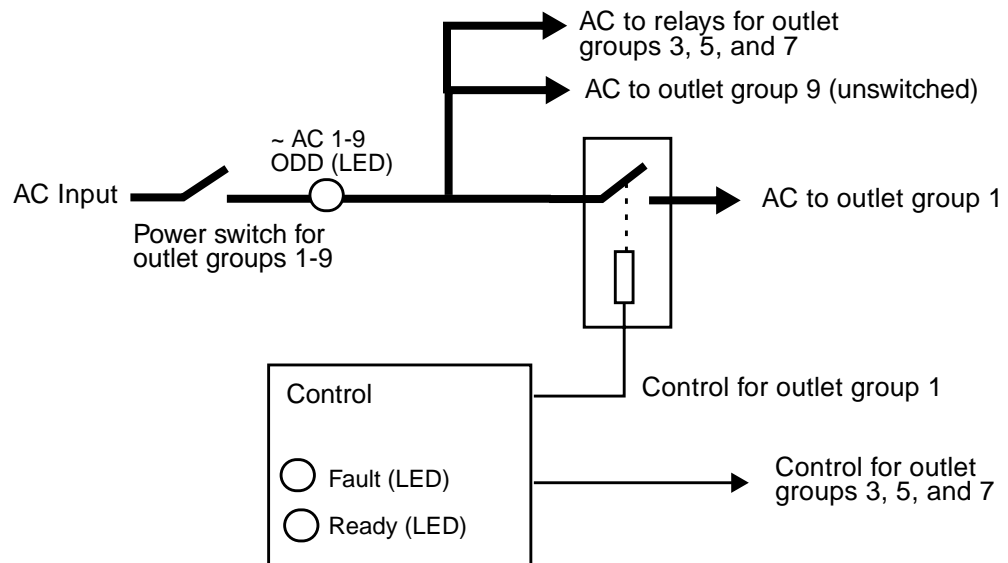
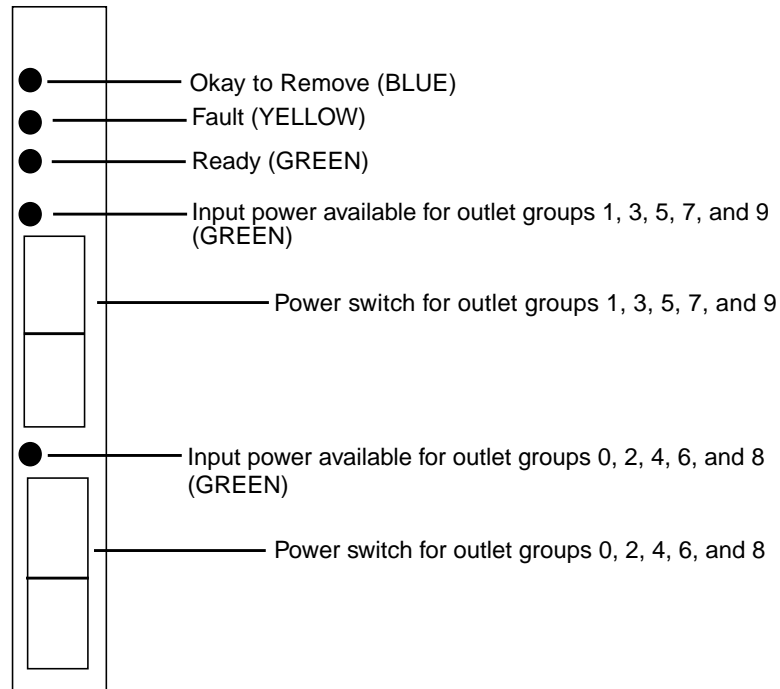


FIGURE 2-1 Simplified Block Diagram of a Single Circuit in a Power Sequencer



**FIGURE 2-2** Power Sequencer LEDs

**TABLE 2-1** Sequencer LEDs

LED	ON indicates
Okay to Remove	The sequencer output AC is turned off; there is no power to the power strip outlet groups.
Fault	A problem in the sequencer; either with the sequencer controller or one of the power supplies, or one or more of the outlet groups is not energized. Note: An open (OFF) power switch is not a Fault condition.
Ready	The sequencer is operational and has passed the power-on-self-test (POST).
~ AC 1-9 ODD (Input power available)	AC power is available to the input side of the odd-numbered outlet group relays. Note: this LED only indicates that power is available to the outlet group relays; it does not indicate that AC power is output from the sequencer.
~ AC 0-8 EVEN (Input power available)	AC power is available to the input side of the even-numbered outlet group relays. Note: this LED only indicates that power is available to the outlet group relays; it does not indicate that AC power is output from the sequencer.

**TABLE 2-2 LED Indicators on the Power Sequencer**

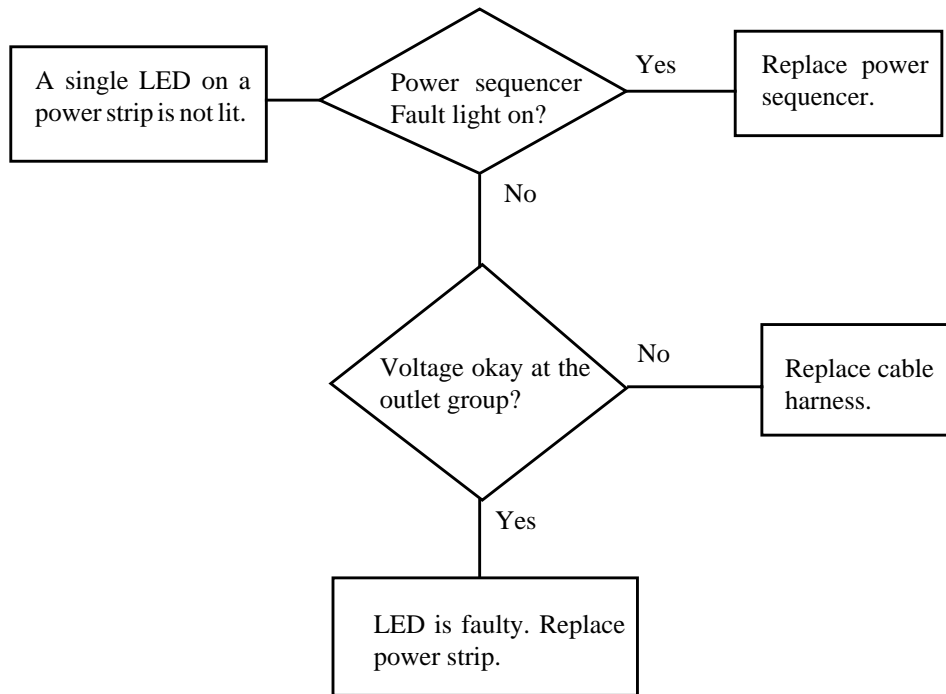
<b>Condition</b>	<b>LED</b>	<b>LED Status</b>	<b>Troubleshooting Action</b>
Normal operation	Okay to Remove	OFF	No action required.
	Fault	OFF	
	Ready	ON	
	~ AC 1-9 ODD	ON	
	~ AC 0-8 EVEN	ON	
Sequencer fault	Okay to Remove	OFF	1. Turn off both power switches. The blue "Okay to Remove" LED lights. 2. Remove and replace the power sequencer.
	Fault	ON	
	Ready	(ON or OFF)	
	~ AC 1-9 ODD	ON	
	~ AC 0-8 EVEN	ON	
Turned off	Okay to Remove	ON	You can safely remove the sequencer.
	Fault	(ON or OFF)	
	Ready	(ON or OFF)	
	~ AC 1-9 ODD	OFF	
	~ AC 0-8 EVEN	OFF	
Missing AC input	Okay to Remove	OFF	Assuming both power switches are on, start troubleshooting the input to the sequencer: 1. Input power panel connectors 2. Branch (wall) circuit breaker
	Fault	OFF	
	Ready	ON	
	~ AC 1-9 ODD	OFF	
	~ AC 0-8 EVEN	ON	

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## Power Strips

Each power strip is divided into outlet groups. Each outlet group has four outlets (sockets). The outlet groups are divided into two sets: odd and even. The odd outlet groups are 1, 3, 5, 7, and 9. The even outlet groups are 0, 2, 4, 6, and 8. The odd outlet groups receive their power from one AC input and the even outlet groups receive their power from the other AC input.

The power strips have a power indicator LED for each outlet group.



**FIGURE 2-3** Troubleshooting a Power Strip