2

Machine Service and Component Replacement Basics

This chapter provides information on the following basic tasks for servicing the slot machine and replacing components:

- Identifying the machine version
- Returning defective components
- Using the proper tools, equipment, and supplies
- Understanding the machine cabinet layout
- Identifying the main harness connectors
- Accessing machine components
- Executing common procedures

Overview

This chapter contains basic information about servicing the slot machine and accessing components. The term *component*, as used in this guide, identifies major hardware assemblies, such as the display monitor, hopper drawer, power supply, circuit boards, and so on.

◆ *Warning:* Failure to flip the power switch to the Off position before accessing a component can result in personal injury or damage to equipment.

The following table lists the procedures in this chapter.

	See
Identifying the Machine Version	page 2-3
Returning Defective Components	page 2-3
Using the Proper Equipment, Tools, and Supplies	page 2-4
Understanding the Machine Cabinet Layout	page 2-5
Identifying the Main Harness Connectors	page 2-7
Accessing Machine Components	page 2-8
Executing Common Procedures	page 2-21

Figure 2-1 shows the location of the power switch in the currency column. To open the currency column door, refer to "Opening the Currency Column Door" on page 2-8.

*Figure 2-1*   **Power Switch Location**
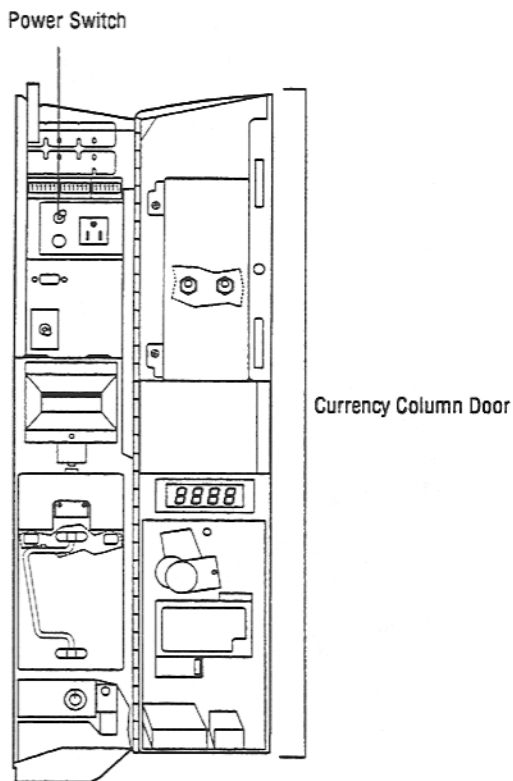
Identifying the Machine Version

A procedure to replace a component may vary, depending on the machine level change (MLC) number of the machine. The MLC number, which represents the machine version, is imprinted on a tag inside the machine. To view this tag, you must open the belly door. Refer to "Opening the Belly Door" on page 2-9.
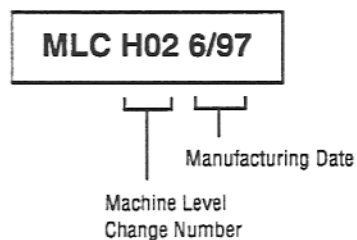
Figure 2-2 shows the location of the MLC tag inside the machine.

Figure 2-2   **Location of MLC Tag**
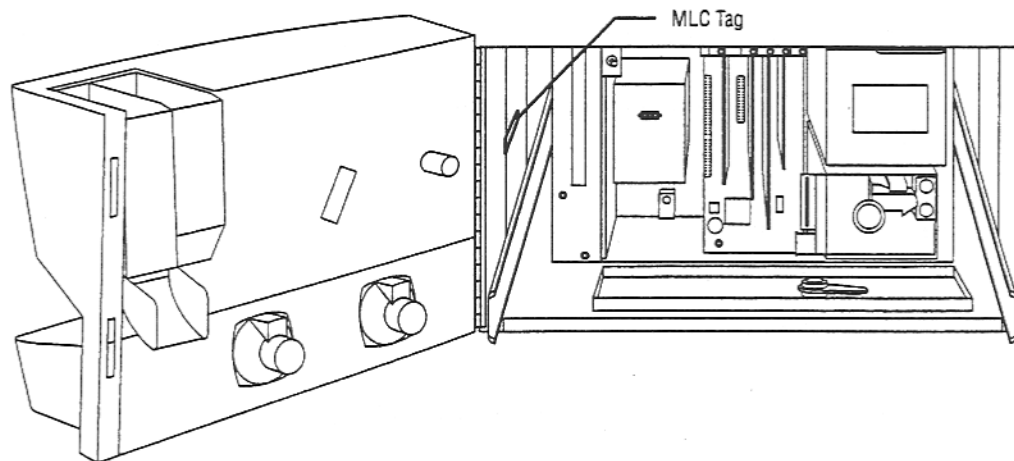
The MLC tag contains a number similar to the one in Figure 2-3.

Figure 2-3   **MLC Tag Example**

The H stands for "hardware." The MLC tag in the figure describes a machine manufactured in June, 1997, built according to specifications for MLC H02.

Returning Defective Components

To report a defective component to Silicon Gaming and request a replacement component, call 1-888-44-SLOTS. Be ready to provide the following information:

♦ Game serial number

♦ Part serial number

♦ Part number

♦ Part description

♦ Nature of the problem

♦ Part quantity

♦ Your ship-to address

♦ Your customer purchase order number

♦ Your preferred shipping method

You will be informed of the shipping charges, and if you request an advance replacement part, you will be informed of any additional expediting charges. Part number information can be found in Appendix B, "Illustrated Parts Breakdown."

Using the Proper Equipment, Tools, and Supplies

To service the machine and replace components, you need a degausser. You also need the following tools:

♦ Phillips-head screwdriver

♦ Stubby Phillips-head screwdriver

♦ Long-stem flat screwdriver

♦ Right-angle screwdriver

♦ Magnetic screwdriver

♦ Soldering scribe (for machines with a peripheral memory board I mounted on a Tucson motherboard)

♦ Long-nose pliers

♦ 3/16" nut driver

♦ 5/16" nut driver

♦ Integrated circuit (IC) remover

♦ Wire cutter

♦ Wire crimper

♦ Wire stripper

♦ Soldering iron

♦ Heat gun

♦ Molex Mini-Fit pin remover

♦ Vise grips

♦ Grounded screwdriver

♦ Set of nonconductive alignment tools

♦ Exacto knife

In addition, you need the following supplies:

♦ Roll-away table (for display monitor replacement)

♦ Dolly (for display monitor replacement)

♦ Pre-printed *coin in, coin out,* and *coin drop* labels (for hard installation)

♦ Female Molex pins (for hard meter installation)

- Heat-shrink tubing (for fluorescent ballast installation and touchscreen controller modification)
- Tie wraps
- Flashlight
- Isopropyl alcohol
- Soft cotton cloth
- Workbench or table with a soft, padded surface (for touchscreen replacement)
- Roll of 20-gauge bus bar wire (for connecting ground strap cable to display monitor chassis)
- Two AC power extension cords (for calibrating the color and brightness on the display monitor)
- Ground strap

## Understanding the Machine Cabinet Layout

The slot machine cabinet is divided into three main areas:

- Display cavity
- Currency column
- Lower cavity

Figure 2-4 on page 2-6 shows the three main areas and the three cabinet doors.

Figure 2-4   **Three Main Slot Machine Areas and Three Cabinet Doors**

- Display Cavity Door
- Display Monitor in Display Cavity
- Currency Column
- Lower Cavity
- Hopper Drawer
- Belly Door
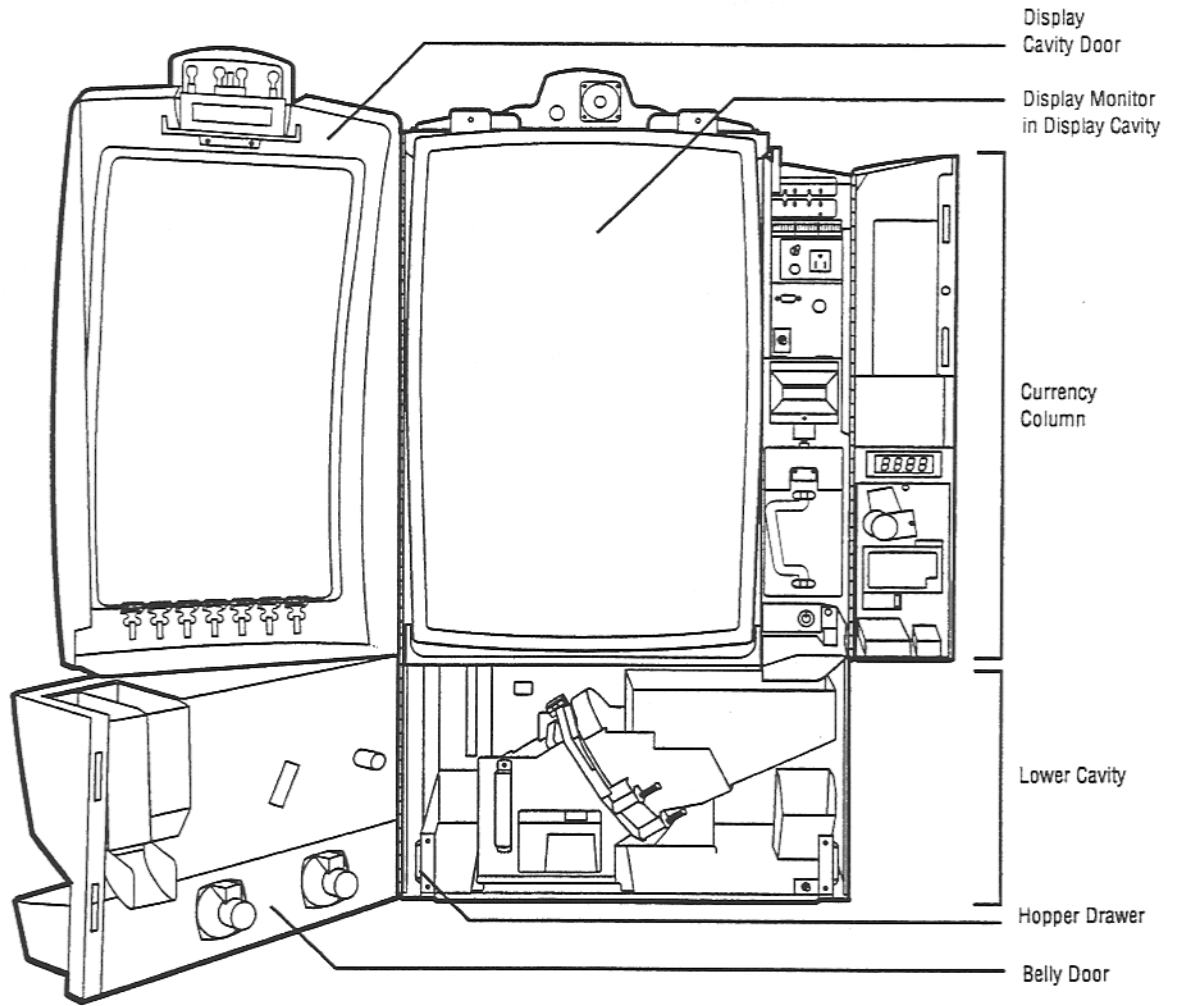
Identifying the Main Harness Connectors

Figure 2-5 shows the main harness and labeled connectors in the machine cabinet.

Figure 2-5   **System Wiring Harness**
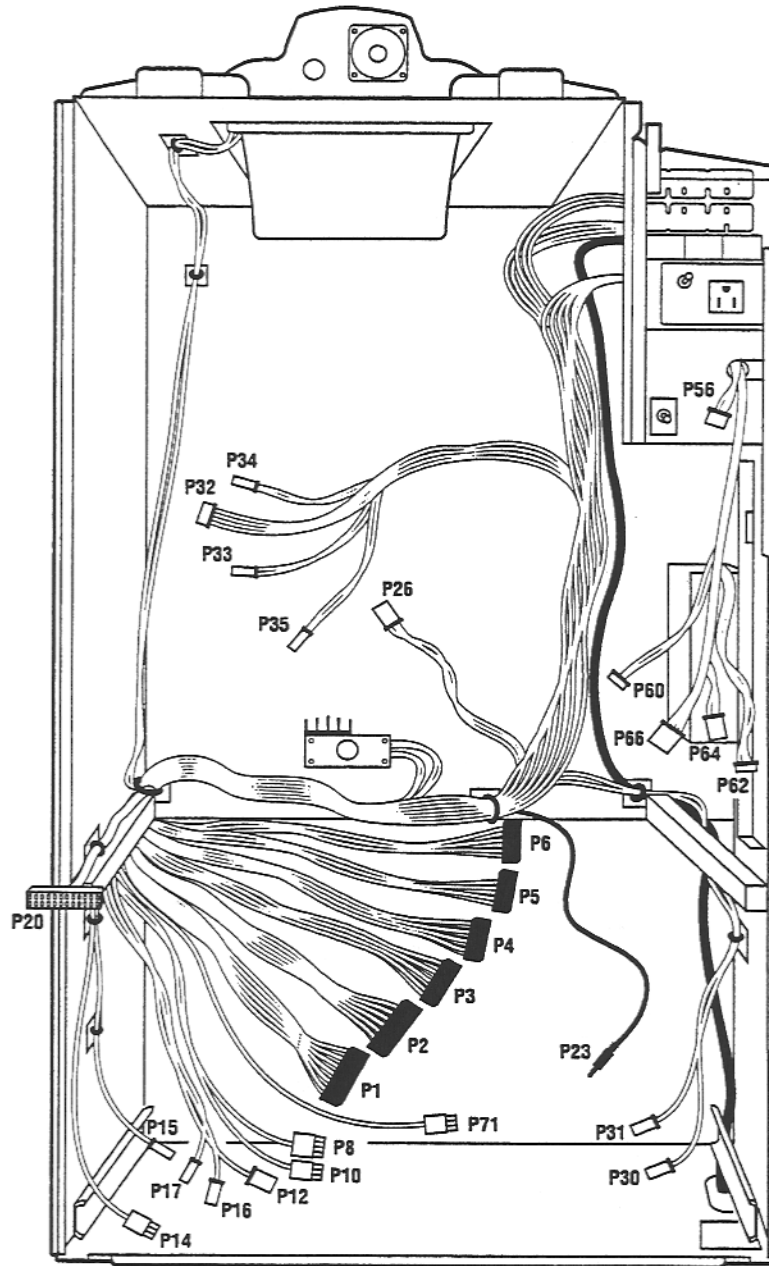
P1	GPIO 40-pin Bottom Connector
P2	GPIO 40-pin Top Connector
P3	GPIO 26-pin Bottom Connector
P4	GPIO 26-pin Top
P5	GPIO 20-pin
P6	GPIO II connector
P8	Touchscreen
P10	VDT Power
P12	Hopper
P14	Belly Lamp Power
P15	Belly Speaker
P16	Belly Door Switch
P17	Network Switch, Belly Door
P20	Bezel
P22	Candle
P23	Audio
P24	Top Speaker
P25	Audio Amp Board
P26	Slot Handle
P30	Drop Door Switch
P31	Network Switch, Drop Door
P32	Bill Acceptor
P33	Cashbox Lock Switch
P34	Cashbox Switch
P35	Network Switch, Cashbox
P36	Network
P37	Network Switch
P38	Meters
P40	MMS Keyswitch
P42	Currency Column Door Switch
P43	Network Switch, Currency Column
P46	CPU Power Input
P48	Belly Power Input
P50	Hopper Power Input
P52	VDT Power Input
P56	Currency Column Lamps & Switches
P60	Credit Display
P62	Diagnostic Display
P64	Coin Comparator
P66	Coin Path
P68	Service Port
P71	CPU Power (Previously P6)

Refer to this figure to locate the connectors referenced in procedures.

Accessing Machine Components

To service the machine and replace components, you must first gain access to the machine cavities and the components inside. The following sections describe common access procedures.

Opening and Closing the Cabinet Doors

Figure 2-6 shows the locations of the door locks. The figure also shows the location of the MMS keyswitch used for invoking the MMS.

🏈 *Important:* Do not confuse the MMS keyswitch with the currency column door lock.

Figure 2-6   **Machine Lock Locations**
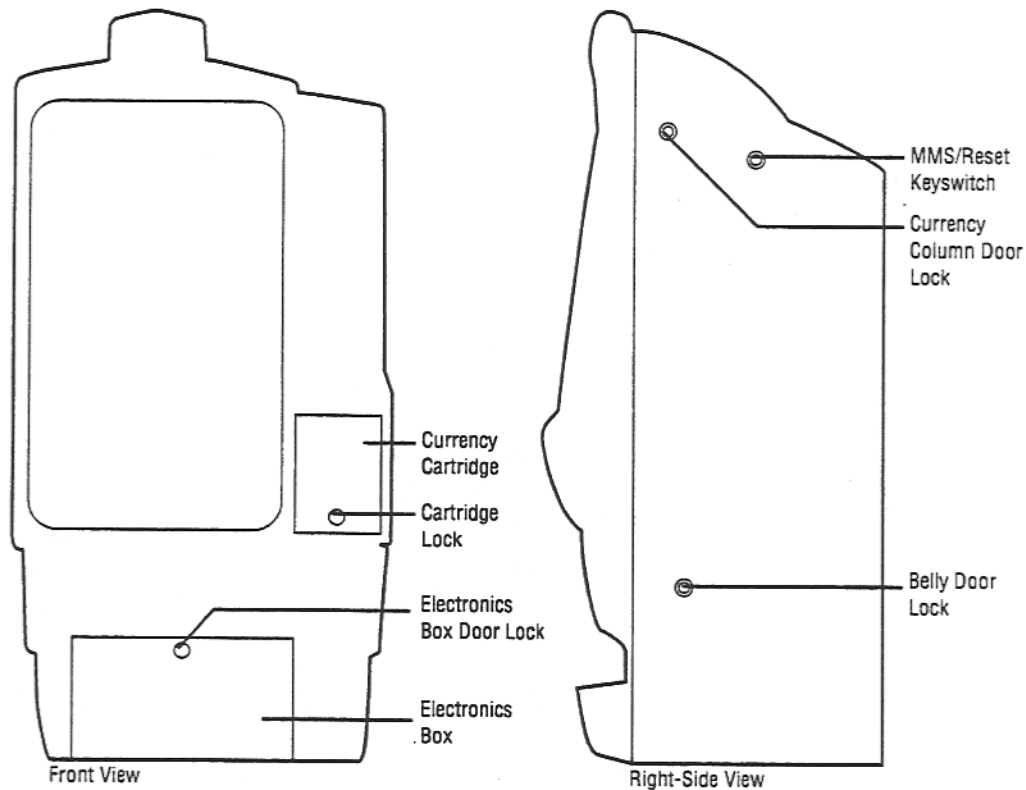
For more information about door locks, refer to "Installing Door Locks" on page 3-7 and "Replacing a Door Lock" on page 13-33.

Opening the Currency Column Door

🎵 *Note:* In the MLC H01 machine, you cannot open the currency column door without first opening the belly door. For information on identifying the machine version, refer to "Identifying the Machine Version" on page 2-3. For information on opening the belly door, refer to "Opening the Belly Door" on page 2-9.

To open the currency column door, perform the following steps:

1. Insert the currency column door key in the door lock on the upper-right side of the machine.

2. Turn the key clockwise until it stops.

3. Lift up on the latch handle at the top of the currency column door and pull the door open to the right.

Closing and Locking the Currency Column Door

To close and lock the currency column door, lift the latch, swing the door shut, turn the door key counter-clockwise until it stops, and remove the key.

Opening the Belly Door

To open the belly door, perform the following steps:

1. Insert the belly door key in the door lock on the lower-right side of the machine.

2. Turn the key counter-clockwise and lift up on the latch handle at the side of the belly door.

3. Pull the door open to the left.

Closing and Locking the Belly Door

To close and lock the belly door, lift the latch, swing the door shut, turn the door key clockwise until it stops, and remove the key.

Opening the Display Cavity Bezel

To open the bezel on the display cavity, perform the following steps:

1. Open the currency column door as described in "Opening the Currency Column Door," above.

2. Remove the two screws on the right side of the bezel and swing the bezel to the left.

Closing the Display Cavity Bezel

To close the bezel on the display cavity, perform the following steps:

1. Swing the bezel to the right

2. Insert and secure the two screws on the right side of the bezel.

Removing the Hopper Drawer

The hopper drawer is the large metal bin at the front of the lower cavity. Figure 2-4 on page 2-6 shows its location. To access components in the lower cavity, you may have to remove this drawer.

Important: If you are upgrading or replacing the hopper as part of a coin denomination upgrade, perform the procedure "Changing the Coin Denomination" on page 10-22.

To remove the hopper drawer, perform the following steps:

1. Open the currency column door. Refer to "Opening the Currency Column Door" on page 2-8.

2. Flip the power switch to the Off position.

    Warning: Failure to turn off the machine can result in personal injury or damage to equipment.

3. Open the belly door. Refer to "Opening the Belly Door" on page 2-9.

4. Disconnect the P12 cable between the main harness and the hopper.

5. Disconnect the P16 and P17 cables between the main harness and the belly door sensors.

6. Pull the hopper drawer towards you until it stops.

7. Push in the metal tabs located near the front ends of the rails on both sides of the hopper.

8. While holding the rail tabs in, pull the hopper drawer straight toward you and out of the slot machine.

9. Place the drawer on a flat surface.

Installing the Hopper Drawer

To install the hopper drawer, perform the following steps:

1. Ensure the slides are pulled out from the cabinet.

2. Align the slides on the hopper drawer with the rails on the cabinet and push the hopper in until it is secure in the rails.

3. Connect the three cables between the hopper drawer and the belly doorswitch. One cable connector is P12 (the hopper connector). The other two are P16 and P17 (belly door sensor connectors).

4. Push the hopper into the cabinet.

Verifying Hopper Operation

This test ensures that the hopper ejects the correct number of coins.

To verify hopper operation, perform the following steps:

1. Flip the power switch for the slot machine to the On position.

2. Load the hopper bowl with 50 to 60 quarters.

3. Invoke the MMS and access the MMS **Diagnostics** page. Refer to "Invoking the MMS" on page 2-23.

4. The **Diagnostics** page is displayed. Find the Hopper dialog box shown in Figure 2-7 on page 2-11.

Figure 2-7   **Hopper Dialog Box**

Hopper
Hopper is not full
Coin Sensor Status: OFF
◯ Pay 10 Coins
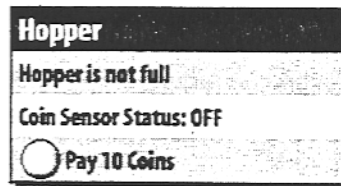
5. Touch the *Pay 10 Coins* button.

6. Catch the coins as they are ejected from the left-front slot of the hopper.

    If 10 coins are ejected and *Hopper* changes to *Hopper paid coins,* the hopper is operating correctly.

7. Exit the MMS. Refer to "Exiting the MMS" on page 2-25.

8. Push the hopper drawer into the cabinet.

9. Close the belly door. Refer to "Closing and Locking the Belly Door" on page 2-9.

10. Close the currency column door. Refer to "Closing and Locking the Currency Column Door" on page 2-9.

Opening the Electronics Box Door

🏈 *Important:* Slot machines that are connected to a Wide Area Progressive System have a tamper-proof seal that prevents you from opening the door to the electronics box. Do not break the seal unless you are an authorized Silicon Gaming field engineer. Instead, to replace a component inside the electronics box, or to perform a SafeClear operation, call 1-888-44-SLOTS.

To open the electronics box door, perform the following steps:

1. Open the currency column door. Refer to "Opening the Currency Column Door" on page 2-8.

2. Flip the power switch to the Off position.

    ◆ *Warning:* Failure to turn off the machine can result in personal injury or damage to equipment.

3. Open the belly door. Refer to "Opening the Belly Door" on page 2-9.

4. Remove the hopper drawer. Refer to "Removing the Hopper Drawer" on page 2-9.

5. Disconnect the three-wire CPU power cable connector (P71) from Q6 on the front of the electronics box.

    🍒 *Note:* The P71 connector was previously named P6. It was renamed to avoid confusion with the P6 connector in the GPIO II box.

6. Insert the electronics box key in the lock on the electronics box door.

7. Place your hand against the door and turn the key clockwise until it stops.

8. Slowly lower the door until it rests on the floor of the lower cavity.

Removing the Electronics Box Door

To remove the electronics box door, perform the following steps:

1. Slide the door to the left until the tabs, which act as hinges, are free from the box.
2. Remove the door.

Installing the Electronics Box Door

To install the door on the electronics box, perform the following steps:

1. Place the front side of the door flat against the floor of the lower cavity, with the tabs on the door edge toward the back of the cabinet.
2. Lift the door an inch from the floor of the cavity and insert the tabs on the door into the notches on the lower edge of the electronics box.
3. Slide the door to the right until the tabs, which act as hinges, stop it from moving farther.

Closing the Electronics Box Door

To close and lock the electronics box door, perform the following steps:

1. Lift the free edge of the door and push the door flat against the electronics box, making sure all loose cables are outside the door.
2. Lock the door by pushing in on the key and turning it clockwise until it stops.
3. Connect the three-wire CPU power cable connector (P71) to Q6 on the front of the electronics box.

    Note: The P71 connector was previously named P6. It was renamed to avoid confusion with the P6 connector in the GPIO II box.

Removing the Electronics Box

To access components in the lower cavity, you may have to remove the electronics box from the back of the display cavity.

To remove the electronics box, perform the following steps:

1. Open the currency column door. Refer to "Opening the Currency Column Door" on page 2-8.
2. Flip the power switch to the Off position.

    Warning: Failure to turn off the machine can result in personal injury or damage to equipment.
3. Open the belly door. Refer to "Opening the Belly Door" on page 2-9.
4. Remove the hopper drawer. Refer to "Removing the Hopper Drawer" on page 2-9.

5. Disconnect the GPIO and CPU cables as follows:

a. Unplug the P1 through P5 connectors from the front of the GPIO board, located at the left side of the electronics box. See Figure 2-8 and Figure 2-9 on page 2-14.

Figure 2-8   **P1 through P5 Connectors in GPIO Box**

b. If a P6 connector is stacked with the P5 connector, unplug the P6 connector.
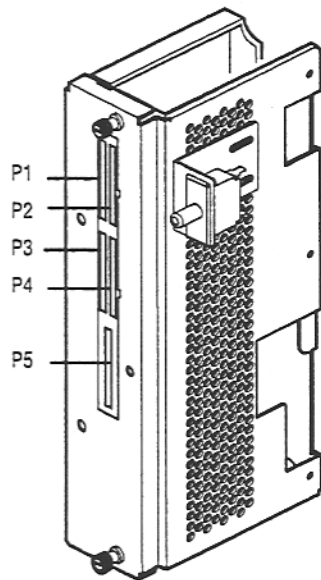
c. Unplug the CPU power cable (P71) from the Q6 connector.

Note: The P71 connector was previously named P6. It was renamed to avoid confusion with the P6 connector in the GPIO II box.

6. Refer to Figure 2-9 on page 2-14 and move the electronics box from the back wall of the cabinet as follows:

Warning: To save the motherboard from electrostatic discharge damage, use a grounding strap or touch the metal on the power supply before touching components in the electronics box.

a. Open the electronics box door and remove it. Refer to "Opening the Electronics Box Door" on page 2-11 and "Removing the Electronics Box Door" on page 2-12.

b. Loosen the two captive screws that secure the electronics box to the back wall of the cabinet. One screw is above the transformer box and the other is below. Figure 2-9 on page 2-14 shows the transformer box inside the electronics box.

Figure 2-9 **Electronics Box Inside Cabinet**
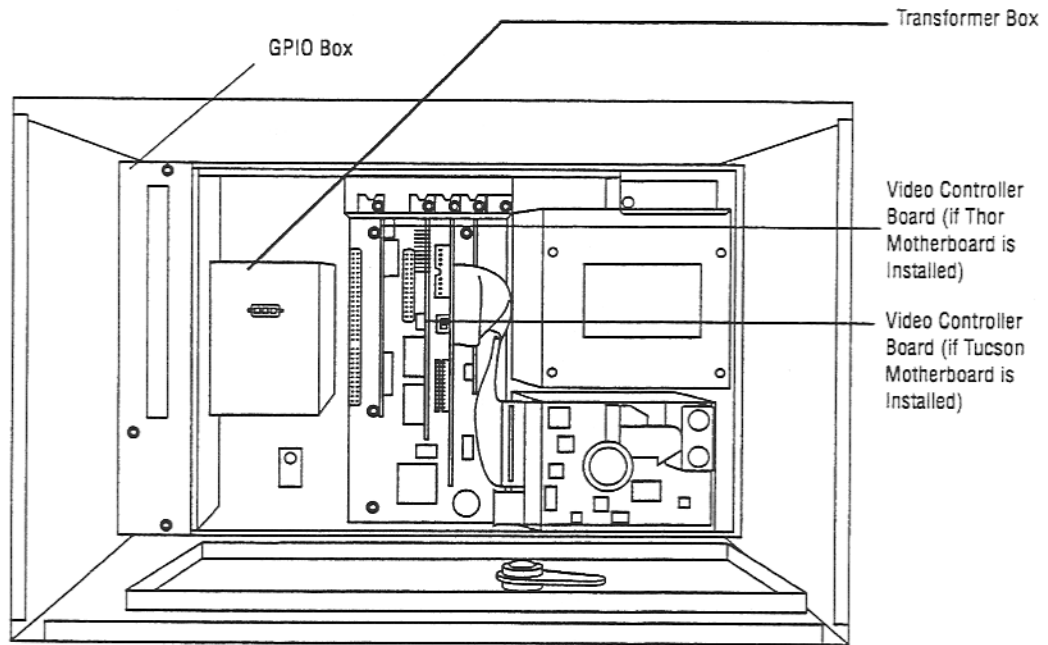
Tip: You will know each screw is loose enough when you hear the spring pop.

c. The box is standing on end so that the back of the box is on top. Disconnect the black audio cable from the top of the box as it currently stands. Figure 2-10 shows the location of the audio cable plug.

Figure 2-10 **Top View of Electronics Box Standing in Lower Cavity**
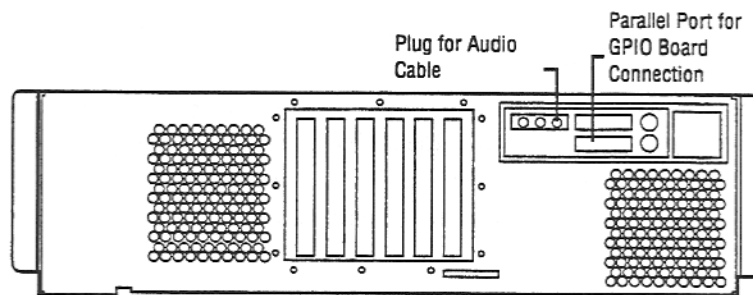
d. Pull the box forward.

e. Free the video controller board from its connection to the machine as follows:

Remove the screw that secures the top of the board to the bracket.

Reach under the display monitor and find the three sockets for connectors. If there is a cable coming from the socket farthest to the right, it is the video patch cable, which is connected to the video controller board. Unplug it from the display monitor chassis.

If you find no video patch cable, disconnect the video cable from the video controller board by loosening the two screws on the connector.

f. Pull the electronics box out of the lower cavity and place it on a flat surface.

Installing the Electronics Box

To install the electronics box, perform the following steps:

1. Stand the electronics box up so the motherboard is facing you and the circuit boards are hanging down from the circuit board bracket.

2. Place the electronics box in the cabinet but do not slide it back.

3. Connect the audio and video cables as follows:

    a. Plug the audio cable into the opening farthest to the right in the three-hole plug, located on the top of the electronics box (as it now stands). Figure 2-10 shows the opening for the cable.

    b. If you unplugged the video patch cable, reach under the display monitor and plug it into the socket farthest to the right in the series of three connectors.

    c. If you have no video patch cable, plug the video cable into the video controller board and tighten the two captive screws on the connector.

    d. Secure the video controller board to the bracket, using the screw.

4. Slide the electronics box partially into the lower cavity so that it is parallel to the back of the slot machine cabinet.

5. Pull the cables hanging near the back cabinet wall to the left side of the lower cavity.

6. Position the wires on the left side of the cavity so that they are flush against the left cabinet wall and out of the way of the electronics box. Ensure the wires are free and the cables to the circuit boards are not between the back of the electronics box and the cabinet wall.

7. Slide the electronics box all the way to the back wall of the cabinet.

8. Tighten the captive screws above and below the transformer box until they stop.

    Important: Do not overtighten these screws. Overtightening can strip the screw or cause the screw head to snap.

9. Install the door on the electronics box. Refer to "Installing the Electronics Box Door" on page 2-12.

10. Close and lock the door on the electronics box. Refer to "Closing the Electronics Box Door" on page 2-12.

11. Connect the GPIO and CPU power cables as follows:

    a. Plug connectors P1 through P5 on the left cabinet wall into the P1 through P5 connectors in the GPIO box. Figure 2-8 on page 2-13 shows the placement of the connectors.

    b. If you have unplugged the P6 connector from the GPIO board, plug it back into the board next to the P5 connector.

    c. Plug the CPU power cable (P71) into the Q6 connector.

> *Note:* The P71 connector was previously named P6. It was renamed to avoid confusion with the P6 connector in the GPIO II box.

12. Install the hopper drawer. Refer to "Installing the Hopper Drawer" on page 2-10.

13. Close the belly door. Refer to "Closing and Locking the Belly Door" on page 2-9.

14. Close the currency column door. Refer to "Closing and Locking the Currency Column Door" on page 2-9.

Removing the Top Cap

The top cap is the large piece of metal that covers the entire top of the slot machine.

To remove the top cap, perform the following steps:

1. Open the currency column door. Refer to "Opening the Currency Column Door" on page 2-8.

2. Flip the power switch to the Off position.

> *Warning:* Failure to turn off the machine can result in personal injury or damage to equipment.

3. Remove the five screws that secure the top cap to the top of the cabinet. When you face the front of the machine, one screw is at each corner of the cap and a fifth screw is to the right of the speaker enclosure.

> *Important:* Some slot machines have a cotter pin through each of the screws in the front corners of the top cap. You must remove them before removing the screws.

4. Lift the top cap off and away from the slot machine.

Installing the Top Cap

To install the top cap, perform the following steps:

1. Place the top cap over the top of the slot machine.

2. Secure the top cap to the sides of the cabinet with the five screws.

> *Important:* If you removed a cotter pin from each of the screws in the front corners of the top cap, insert these pins through the screws.

3. Close the currency column door. Refer to "Closing and Locking the Currency Column Door" on page 2-9.

Removing the Display Monitor Chassis

To remove the display monitor chassis from the display cavity, perform the following steps:

1. Open the currency column door. Refer to "Opening the Currency Column Door" on page 2-8.

2. Flip the power switch to the Off position.

◆ *Warning:* Failure to turn off the machine can result in personal injury or damage to equipment.

3. Recruit someone to help move the slot machine. Unplug the machine from the wall. Using a dolly, move the machine to a service area away from the casino floor.

4. Open the bezel on the display cavity bezel. Refer to "Opening the Display Cavity Bezel" on page 2-9.

5. You must remove the coin guard before removing the display monitor chassis. Figure 2-11 shows the coin guard outside the bottom-right corner of the display monitor.

Figure 2-11   **Screws Securing Coin Guard**
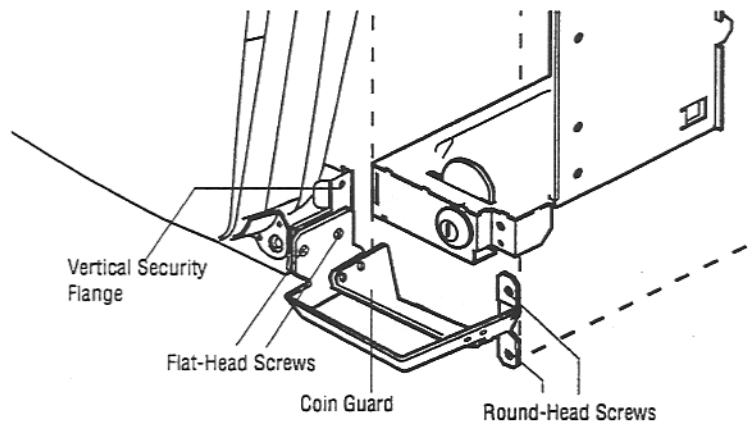
To remove the coin guard, perform the following steps:

a. Remove the two flat-head screws to the left of the guard.

b. Remove the two round-head screws to the right of the guard.

c. Remove the coin guard and the attached vertical security flange.

6. Refer to Figure 2-12 on page 2-18 and detach the display monitor chassis from the display cavity as follows:

a. Remove screw 1 from the display cavity shoulder on the left.

b. Remove screws 2 and 3 on the top left and top right of the display cavity.

   ✏ *Important:* Do not remove any of the four screws at the four corners of the touchscreen.

Figure 2-12 **Screws Securing Display Monitor Chassis to Display Cavity**
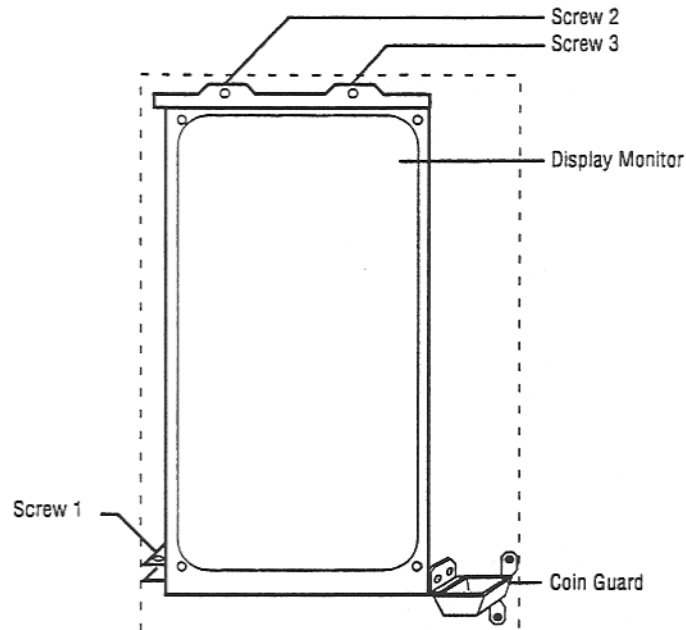
7. To access the monitor cables, open the belly door and remove the hopper drawer. Refer to "Opening the Belly Door" and "Removing the Hopper Drawer" on page 2-9.

8. Disconnect the power cable (P10) and the touchscreen cable (P8) from below the display monitor.

   Note: When you face the touchscreen, the three-pin power cable (P10) is plugged into the connector farthest to your left and the eight-pin touchscreen cable (P8) is plugged into the middle connector.

Figure 2-13   **Touchscreen Controller Attached to Display Monitor Chassis**

Touchscreen Controller

Light

Screws

Display Monitor Chassis

Left Side View of Video Chassis
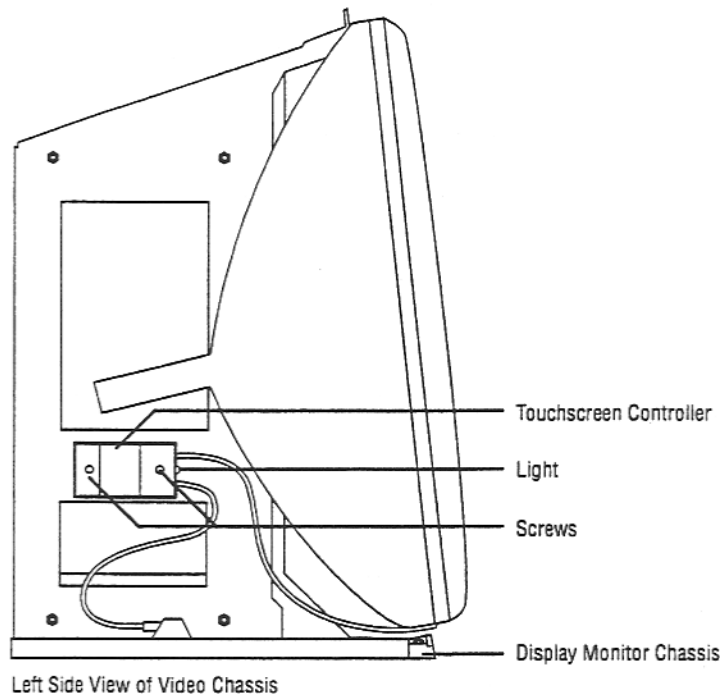
9. Place a roll-away table in front of the slot machine so that the top of the table is even with the bottom of the display cavity.

10. Recruit someone to help lift the monitor. With one person standing on either side of the monitor chassis, steady the top of the monitor with one hand while lifting and pulling the monitor and chassis out of the cabinet with the other hand.

11. When you have pulled the chassis far enough out of the cabinet to access the wires coming from the back, set the chassis down on the table.

12. If the machine has a video patch cable, disconnect it from the socket under the display monitor and disconnect the audio cable from the electronics box. See Figure 2-14 for the location of the audio cable socket.

Figure 2-14   **Top View of Electronics Box Standing in Lower Cavity**

Slot 1   Slot 2   Audio Cable Socket

If the machine has no video patch cable, disconnect the video cable from the video controller board as follows:

a. Locate the video cable coming from the top of the electronics box, standing in the lower cavity.

b.   Loosen the two screws that secure the cable to the video controller board and unplug the cable from the board.

13.   Roll the table, with the display monitor and chassis, away from the slot machine.

Installing the Display Monitor Chassis

To install the display monitor chassis in the display cavity, perform the following steps:

1.   Place the monitor chassis on the roll-away table and wheel the table to the slot machine. Line up the table with the bottom of the display cavity.

2.   If the machine has a video patch cable, plug the cable coming from the video controller board into the underside of the socket farthest to the right of the three sockets under the display monitor. Plug the audio cable into the socket shown in Figure 2-14 on page 2-19.

3.   If the machine has no video patch cable, refer to Figure 2-14 on page 2-19 and connect the video cable to the video controller board as follows:

a.   Find the connector that has two screw holes for the video controller cable in one of the two slots shown in the figure.

b.   Plug the video cable into the video board connector and secure the cable to the board by tightening the two screws.

4.   Recruit someone to help you. With one person standing on either side of the display monitor, steady the top with one hand while pushing the monitor into the cabinet with the other hand.

5.   Connect the power cable and the touchscreen cable to two of the three connectors on the under side of the monitor.

> *Note:* When you face the touchscreen, the three-pin power cable (P10) plugs into the connector farthest to your left and the eight-pin touchscreen cable (P8) plugs into the middle connector.

6.   Refer to Figure 2-12 on page 2-18 and secure the monitor chassis to the display cavity as follows:

a.   Align the screw hole in the lower-left corner of the display monitor with the screw hole on the left shoulder of the display cavity.

b.   Secure the monitor to the shoulder, using screw 1.

c.   Align the screw holes on the top right and top left of the display monitor with the two screw holes at the top of the display cavity.

d.   Secure the top of the monitor to the display cavity, using screws 2 and 3.

7.   Refer to Figure 2-11 on page 2-17 and attach the coin guard outside the bottom-right corner of the display monitor chassis as follows:

a.   Align the two screw holes on the left of the guard with those on the corner of the chassis.

b.   Secure the guard and the flange to the chassis with two flat-head screws on the left of the guard.

c.   Align the two screw holes on the right of the guard with those in the bracket on the right cabinet wall.

    d. Secure the right side of the guard to the bracket with two round-head screws.

8. Install the hopper drawer and connect the hopper. Refer to "Installing the Hopper Drawer" on page 2-10.

9. Close and lock the belly door. Refer to "Closing and Locking the Belly Door" on page 2-9.

Verifying Display Monitor Operation

To verify display monitor operation and calibrate the touchscreen, perform the following steps:

1. Flip the power switch to the Off position.

2. Wait 30 seconds and flip the switch to the On position.

3. If the Game Menu or a game icon animation is displayed on the monitor, installation is successful.

4. Close and lock the currency column door. Refer to "Closing and Locking the Currency Column Door" on page 2-9.

5. If you have moved the slot machine from the casino floor, return it to its location.

6. Degauss the display monitor. Refer to "Degaussing the Display Monitor" on page 2-22.

7. Calibrate the touchscreen. Refer to "Calibrating the Touchscreen" on page 9-40.

Executing Common Procedures

The following are procedures you frequently need to perform when you replace components or service the machine.

Discharging Electrons from the Display Monitor

To avoid electric shock, you must discharge the electrons from the display monitor at the following times:

♦ Before you touch components behind the monitor

♦ Before you calibrate image color and brightness

♦ After you remove the display monitor chassis from the display cavity

To discharge the electrons from the monitor, perform the following steps:

1. Open the currency column door. Refer to "Opening the Currency Column Door" on page 2-8.

2. Flip the power switch to the Off position.

    Warning: Failure to turn off the machine can result in personal injury or damage to equipment.

3. Remove the display monitor chassis. Refer to "Removing the Display Monitor Chassis" on page 2-16.

4. Attach a grounded screwdriver to an earth ground.

    ◇ *Warning:* To avoid electric shock, do not use any other type of screwdriver.

5. Locate the anode clip on the back of the display monitor, shown in Figure 2-15.

Figure 2-15   **Anode Clip on Back of Display Monitor**
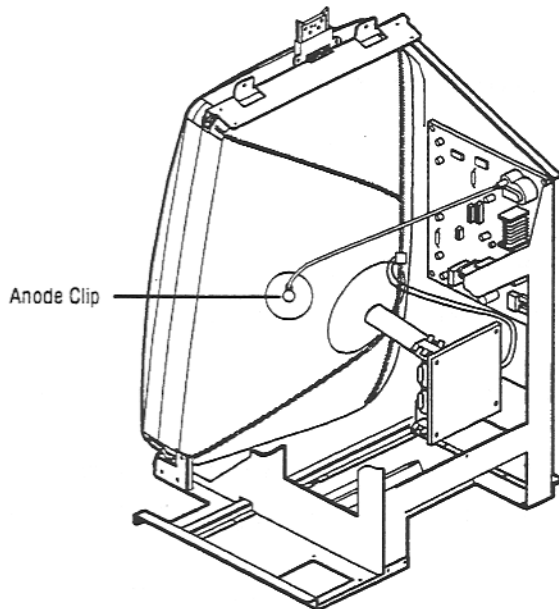
Using your fingers, pull back the rubber around the clip, being careful not to touch the clip with your hands or objects, such as rings or other jewelry.

6. Touch the grounded screwdriver to the anode clip.

Degaussing the Display Monitor

Degauss the display monitor under the following conditions:

♦ Before you align the image on the display monitor

♦ Before you calibrate the image for color and brightness

♦ After you move the slot machine to another location

♦ After you remove the display monitor from the machine

♦ As needed, whenever the color of the screen image is abnormal

To degauss the display monitor, perform the following steps:

1. If the machine is turned off, turn it on as follows:

    a. Open the currency column door. Refer to "Opening the Currency Column Door" on page 2-8.

    b. Flip the power switch to the On position.

2. Plug the degausser into a power outlet.

3. Press the button on the inner rim of the degausser and hold it down as you perform the following steps:

a. Refer to Figure 2-16 and circle the outside of the display monitor with the degausser two times.

Figure 2-16   **Degaussing Pattern**
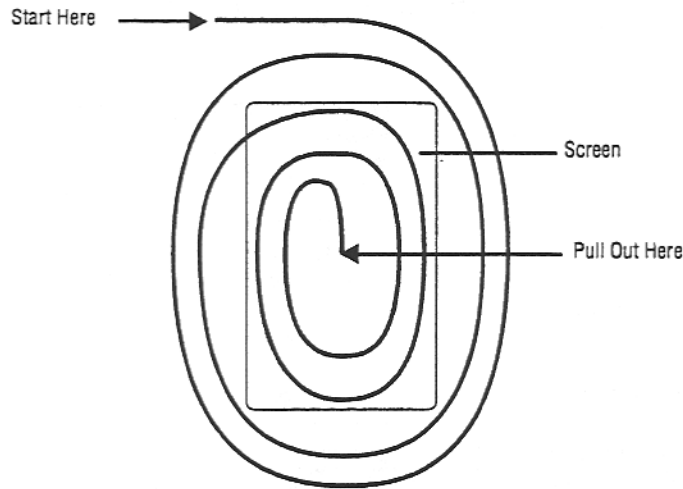
b. Circle inside the screen twice.

c. Move the degausser to the center of the screen and pull the degausser straight out from the screen (toward you).

4. Unplug the degausser.

Invoking the MMS

To invoke the MMS from a game or the Game Menu, perform the following steps:

1. If the machine is off, turn it on as follows:

   a. Open the currency column door. Refer to "Opening the Currency Column Door" on page 2-8.

   b. Flip the power switch to the On position.

2. Insert the MMS key in the keyswitch located on the upper-right side of the slot machine cabinet.

3. Turn the key clockwise once and release it to invoke the MMS **Game Play Monitor** page, shown in Figure 2-17 on page 2-24. The key returns to its original position.

   Note: Turning the key a second time returns the machine to its previous state.

Figure 2-17   MMS Game Play Monitor Page

Game Play Monitor

Time: 10:18:28a
Date: 8-21-98
Loc: 556560

Game Recall Summary   Show Game Recall

Date	Time	Game	Wager	Outcome	Paid	Credit
8-17-98	10:26:09p	Big Win 4X-EXCM	0	IPL: 625 X 0 (d2	0	764
8-17-98	10:22:09p	Big Win 4X-EXCM	50	vustagblpwSbytgcb	0	764
8-17-98	10:22:06p	Big Win 4X-EXCM	50	gSplyvavcggwybtp	0	814
8-17-98	10:22:01p	Big Win 4X-EXCM	50	cactpirSSStpbgrgt	0	864
8-17-98	10:21:57p	Big Win 4X-EXCM	50	yzSrgSSgrrbggpSo	10	914
8-17-98	10:21:53p	Big Win 4X-EXCM	50	btSpwSancyySwcmp	0	954
8-17-98	10:21:49p	Big Win 4X-EXCM	50	crpcgtctwrwltbob	0	1,004
8-17-98	10:21:44p	Big Win 4X-EXCM	50	Sbogbpyurpbpbtp	110	1,054
8-17-98	10:21:38p	Big Win 4X-EXCM	50	SSwrSrSSpcmtSvgm	50	994
8-17-98	10:21:33p	Big Win 4X-EXCM	50	prtmowtptaScwtS	0	994

Last 10 Bills Accepted   Touch a bill for details

Newest   Oldest

| 1 | | | | | | | | | |

1 bill has been accepted

Volume Settings

Event Log   Refresh

8-21-98	10:15:47a	Launched 4.512/MMS/mms.rex
8-21-98	10:15:46a	MMSKey
8-20-98	7:45:33p	ReturnToNavigator
8-20-98	7:45:30p	WAPSLinkDown
8-20-98	7:45:29p	WarmRestart
8-20-98	7:45:29p	Launched 4.768/BIGWIN/bigwin.rex
8-20-98	7:45:21p	Service port enabled (COM7)
8-20-98	7:23:44p	set base time = 08/20/1998 19:23:46
8-20-98	6:47:27p	set base time = 08/20/1998 18:47:28
8-20-98	6:20:20p	set base time = 08/20/1998 18:20:21
8-20-98	5:53:37p	set base time = 08/20/1998 17:53:39
8-20-98	5:22:46p	set base time = 08/20/1998 17:22:47
8-20-98	4:58:59p	set base time = 08/20/1998 16:59:00
8-20-98	4:29:20p	set base time = 08/20/1998 16:29:22
8-20-98	3:54:42p	set base time = 08/20/1998 15:54:44
8-20-98	3:20:29p	set base time = 08/20/1998 15:20:31
8-20-98	2:49:37p	set base time = 08/20/1998 14:49:39
8-20-98	2:20:25p	set base time = 08/20/1998 14:20:26

Side tabs: Game Play Monitor | Accounting | Configuration | Diagnostics

Calibrate Screen   Take Machine Out of Service   Next Page

4. Open any door. Refer to "Opening and Closing the Cabinet Doors" on page 2-8.

5. Access the appropriate MMS page (**Accounting, Configuration,** or **Diagnostics**) by touching the appropriate page tab along the right side of the page image.

> *Note:* When you activate the MMS by using the MMS key, the **Game Play Monitor** and **Accounting** tabs are the only tabs enabled.

6. To view a page within a page, touch a page tab at the top of the screen.

Exiting the MMS

To exit the MMS, perform the following steps:

1. Turn the MMS key clockwise and remove it from the keyswitch.

2. Verify that all machine doors are closed.

> *Note:* When you exit the MMS, the slot machine returns to the state it was in before you invoked the MMS.

Performing a SafeClear

SafeRAM (SRAM) is the nonvolatile RAM on the peripheral memory board where machine configuration and game-critical information is stored. Clearing the SRAM, also known as performing a SafeClear, is required under the following conditions:

♦ Before enabling games from the game mix

♦ Before changing the machine denomination

♦ After replacing the peripheral memory board

♦ When the machine is stuck in boot mode and when powered up, it crashes

♦ After certain tilt events

A SafeClear erases the data stored on the peripheral memory board's NVRAM modules. There are two types of SafeClears: full and partial. A full SafeClear, also known as a SafeClear All, erases all the information stored in SafeRAM and restores settings to the factory default. A partial SafeClear only erases transactions that were interrupted during a critical phase and resulted in inconsistent data.

Table 2-1 lists the conditions for each type of SafeClear.

Table 2-1   **SafeClear Conditions and the Required Action**

Condition	SafeClear to Perform
To recover from a machine crash	Partial
To reset the machine after tilt events	Partial
After replacing the peripheral memory board	Full
Before enabling games from the game mix	Full
Before changing the machine denomination	Full

If you are changing the machine denomination, see "Changing the Coin Denomination" on page 10-22.

To perform a partial or full SafeClear, perform the following steps:

1. Open the currency column door. Refer to "Opening the Currency Column Door" on page 2-8.

2. Flip the power switch to the Off position.

    Warning: Failure to turn off the machine can result in personal injury or damage to equipment.

3. Open the belly door and remove the hopper drawer. Refer to "Opening the Belly Door" and "Removing the Hopper Drawer" on page 2-9.

4. Open the electronics box door. Refer to "Opening the Electronics Box Door" on page 2-11.

    Caution: The location of the video controller board and peripheral memory board in the motherboard PCI backplane is different, depending on whether the slot machine is configured with a Pentium Thor or Tucson motherboard. In the Thor configuration, the video controller board is in slot #1 (J4C1) and the peripheral memory board is in slot #2 (J4D1). In the Tucson configuration, the PCI slot numbers on the board are in reverse order. The video controller board is in slot #3 (J4D1) and the peripheral memory board is in slot #4 (J4C1). For more information, see "Replacing a Circuit Board" on page 11-13.

5. If the machine contains a peripheral memory board I (not a peripheral memory board II) on a Thor motherboard, remove the peripheral memory board from the slot machine. Refer to "Removing the Peripheral Memory Board" on page 11-16.

    Tip: A peripheral memory board I mounted on a Thor motherboard has DIP switches that you cannot access unless you remove the peripheral memory board. You can determine whether the machine contains a Thor or a Tucson motherboard by checking the location of the battery on the motherboard. The battery on a Thor is in the lower-left corner of the board. On a Tucson motherboard, the battery is midway between the two lower corners of the board.

6. On the peripheral memory board, locate the DIP switch. Refer to Figure 2-18 or Figure 2-19 for switch locations.

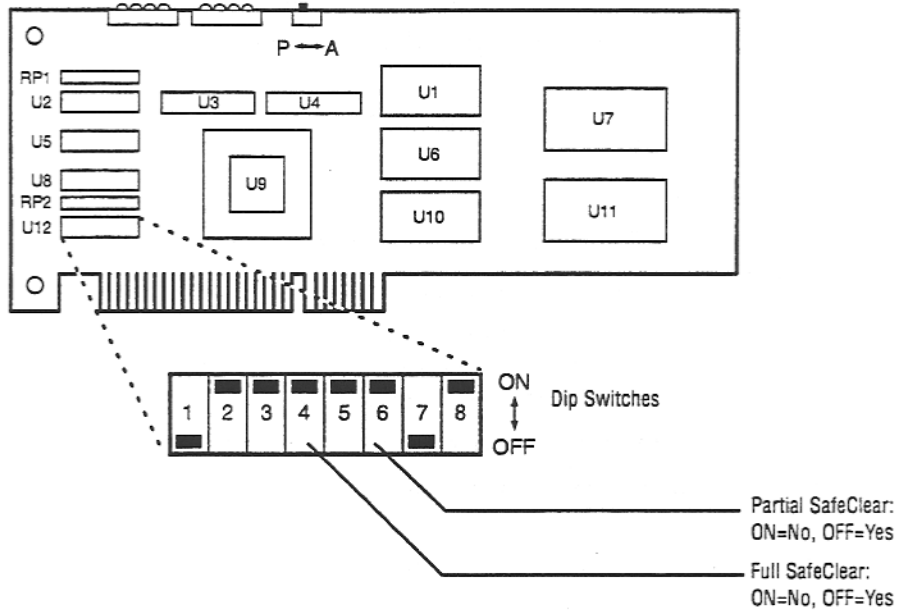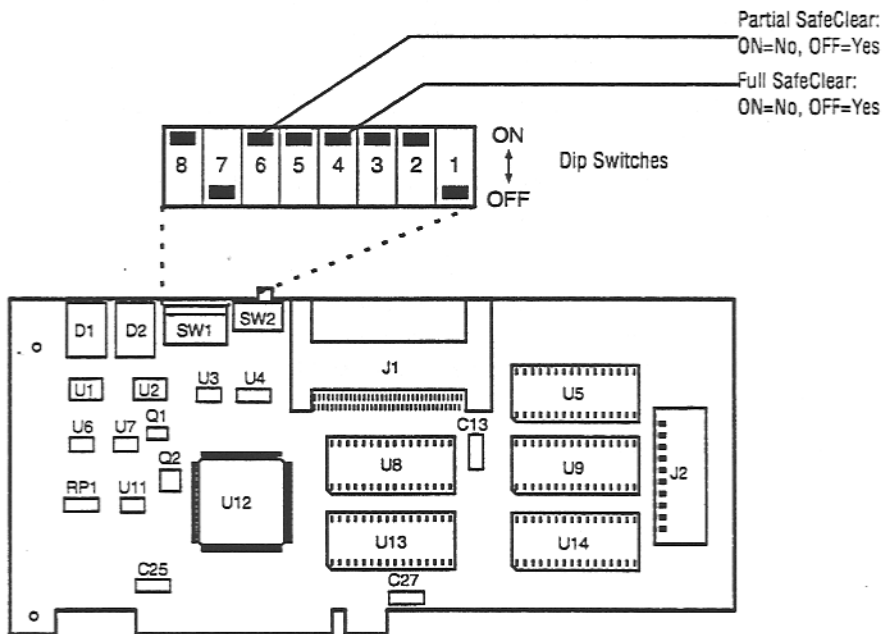*Figure 2-18*   **Peripheral Memory Board I SafeClear Switch Locations**

Figure 2-19   **Peripheral Memory Board II SafeClear Switch Locations**

7. Set the appropriate switch as described below, depending on the type of SafeClear you want to perform:

   Tip: For a peripheral memory board II, the switches are easily accessible because they are at the edge of the board. To set the switches on a peripheral

memory board I mounted on a Tucson motherboard, use a hooked tool such as a soldering scribe.

♦ Partial clear: Set switch 6 to the OFF position

♦ Full clear: Set switch 4 to the OFF position

8. If necessary, re-install the peripheral memory board. Refer to "Replacing a Circuit Board" on page 11-13.

9. Re-install the hopper drawer and reconnect all cables. Refer to "Installing the Hopper Drawer" on page 2-10.

10. Flip the power switch to the On position. Verify the following:

♦ The Silicon Gaming logo is displayed on the monitor screen.

♦ The diagnostics LED displays a series of numbers while the system boots.

Note: When the number 4000 is displayed on the diagnostics LED, SafeStore is cleared. The machine remains in this state until you power the machine down and reset the peripheral memory board DIP switch.

11. When you see the number 4000 on the diagnostics LED, power off the machine.

12. Remove the peripheral memory board. Refer to "Removing the Peripheral Memory Board" on page 11-16

13. On the board's DIP switch, set the switch you changed in step 7 back to its original (ON) position.

Caution: If the machine is rebooted with the DIP switch still configured to SafeClear, the machine will again display the Silicon Gaming logo icon and other system functions will not work. This prevents an attendant from booting the system with the DIP switch set to SafeClear and then walking away from the machine without resetting the DIP switch.

14. If necessary, re-install the peripheral memory board. Refer to "Replacing a Circuit Board" on page 11-13.

15. Re-install the hopper drawer and reconnect all cables. Refer to "Installing the Hopper Drawer" on page 2-10.

16. Flip the power switch to the On position.

If you performed a full SafeClear, the *Out of Service* stoppage is displayed after re-booting the machine because no games are enabled. You will need to reconfigure the slot machine. For more information, see "Configuring the Machine" on page 4-2.

17. Close all machine doors.