# 1.2 INITIAL TESTS AND PROGRAMMING

You have now successfully installed the PSL Slot Machine. However, before making the machine available to patrons, you must test the unit and program its parameters to suit your needs.

☐     1.    Close the front game door. With tokens or coins, play a few games and observe the reels and lamps for any obvious problems or malfunctions. Note the reel symbol stops, coins wagered, and payouts of these first test games; this data will be used in testing.

☐     2.    Refer to Chapter 2, *TESTING AND SOFTWARE PRO-GRAMMING*, of the manual and perform tests 1 through 7 to assess machine operation.

☐     3.    Refer to Chapter 4, *AUDITING*, of the manual verify that the EPROM number and payout percentage are as ordered.

☐     4.    Refer to Chapter 3, *DIP SWITCH PROGRAMMING*, and, following the instructions there, program the various game operation parameters (i.e., low and high limits) with the DIP Switch on the main PCB and sub-PCB.

# Chapter 2

## Testing And Software Programming

## 2.0 SELF-TEST MODE

An extensive self-test procedure is employed by the PSL Slot Machine to verify all aspects of the machine's operation. After accessing the SELF-TEST MODE, you can test the following machine operations:

- Game/Accounting RAM (Random Access Memory) chip.
- Game PCB output to lamps, tower, lockout solenoid, and diverter solenoid.
- Input to game PCB from front door buttons, keyswitch, and coin routing mechanisms.
- Hopper operation.
- Recall of up to the last eight (8) games played (i.e., game designator number, coins/credits wagered, amount paid player, errors/tilts, reel symbols' positions for each game, and credit meter status).
- Reel stop point (physical stops) #33 to #1.
- Individual game play test. (Does not effect software/mechanical coin-in or drop counts.)
- Model number, EPROM payout percentage, and EPROM number verification.
- Winning symbol combination/coin payout count verification.

## 2.1 ACCESSING AND INITIATING SELF-TEST MODES

To access and initiate the SELF-TEST MODE states, use the following procedures.

1. The PSL Slot Machine should have the power on and be in the idle state (i.e., INSERT COIN lamp flashing).

2. Open the game front door, exposing the interior. Midway between the hopper compartment and the reel mechanism compartment is the control panel. Refer to Figure 2-A for a graphic representation of the control panel.
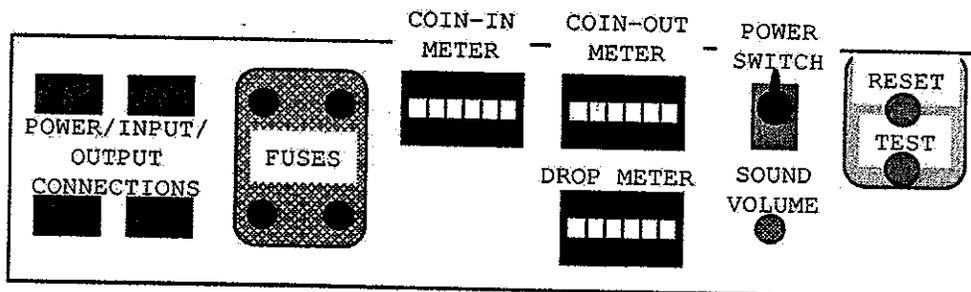


Figure 2-A

**NOTE:** Some older models of the PSL Slot Machine may have a rocker-type single switch for reset and test mode selection. If you have such a model, moving the switch into the upward position selects the Reset; moving it to the downward position selects the various test mode categories.

3. Locate the the button labelled TEST on the control panel and press it once. The flashing message TEST MODE 1 should display on the message Dot Matrix array on the front door.

## 2.2 SELECTING AND USING SELF-TEST MODE STATES

After the first SELF-TEST MODE message displays (i.e., TEST MODE 1), you can select any of the SELF-TEST MODE states by simply pressing the TEST button on the control panel while a message is flashing on and off. The flashing message always designates the presently selected test state, but the test will not be run until the message stops flashing. The SELF-TEST MODE states are in sequential order from 1 to 16. Pressing the TEST button selects the next sequential SELF-TEST MODE state. Pressing the TEST button once when the message on the Dot Matrix is flashing TEST MODE 16 recycles the selected test state to TEST MODE 1.

To initiate and have a test state run, select the SELF-TEST MODE state you want and allow the message on the Dot Matrix array to stop flashing. Immediately after the TEST MODE X message displays steadily (where 'X' represents the number of the test you want to run), that test will be run by the PSL Slot Machine. After the test is complete, the message TEST MODE X will flash again on the Dot Matrix array. You can then select another SELF-TEST MODE state or exit the SELF-TEST MODE.

## 2.3 SELF TEST MODE STATES DEFINED

The PSL Slot Machine has nine SELF-TEST MODE states; TEST MODE 1 through TEST MODE 7, TEST MODE 15, and TEST MODE 16. Test modes 8 through 14 are programming states and are explained in paragraph 2.x below. Test modes 1, 2, 4, 5, 6, 15, and 16 are handled automatically by the PSL Slot Machine's software; test modes 3 and 7 require your interaction with the machine.

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Following are the definitions of the different SELF-TEST MODE states.

## 2.3.1 TEST MODE 1 - GAME/ACCOUNTING RAM TEST

A RAM (Random Access Memory) chip is used on the game PCB to record game and accounting information for games played on the PSL Slot Machine. The RAM chip also handles many of the commands of the microprocessor and its interaction with game/schedule EPROM chip.

The RAM chip is kept "alive" when the PSL Slot Machine is turned off from its supply power by a 3.6 VDC Ni-Cd battery on the same PCB. This battery has a normal lifetime of five or more years with no recharging.

A malfunction of the RAM chip is rare, but can occur due to component breakdown, shorting of current across the chip's pins, or massive electrostatic shock. TEST MODE 1 verifies the RAM chip is functioning properly.

After selecting TEST MODE 1, "6116" should display in the WINNER PAID window of the game front door. If the message "EEEE" is displayed, the RAM chip is bad and must be replaced.

## 2.3.2 TEST MODE 2 - OUTPUT TEST

The game PCB outputs signals to various lamps, 7-segment arrays, and solenoids during the PSL Slot Machine's operation. This test mode verifies that these various electronic and mechanical devices are receiving signals and operating correctly.

When TEST MODE 2 is selected, it first has all seven segments of each 7-segment LED come on to create the digit "8". In the WINNER PAID window of the game front door, "8888" should display. A single "8" should appear in the COIN IN - LAST GAME and COIN IN - THIS GAME windows. Also, "8888" should appear in the CREDIT window of the game door. If any segment of an LED fails to illuminate (i.e., the LED does not form the character "8"), it indicates the LED is bad and in need of immediate replacement.

After the LED segments verification phase, the test continues with the other lamps on the PSL Slot Machine. Each lamp on the game machine will come on in turn. As that lamp is illuminated, a corresponding numeric code will display in the WINNER PAID window of the front game door. Table 2-B shows the lamp/numeric code correspondence.

**PSL Series Slot Machine**

| CODE | LAMP DESCRIPTION | CODE | LAMP DESCRIPTION |
|------|------------------|------|------------------|
| 101 | 1st Coin Pay Lamp | 206 | Coin Accepted Lamp |
| 102 | 2nd Coin Pay Lamp | 207 | Insert Coin Lamp |
| 103 | 3rd Coin Pay Lamp | 208 | Tilt Indicator |
| 104 | 4th Coin Pay Lamp* | 301 | Red Tower Lamp |
| 105 | 5th Coin Pay Lamp* | 302 | White Tower Lamp |
| 201 | 1st Payline Lamp† | 303 | Yellow Tower Lamp |
| 202 | 2nd Payline Lamp† | 401 | COLLECT Button Lamp |
| 203 | 3rd Payline Lamp† | 402 | SPIN Button Lamp |
| 204 | 4th Payline Lamp*† | 403 | BET 1 Button Lamp |
| 205 | 5th Payline Lamp*† | 404 | MAX BET Button Lamp |

Table 2-B

*If your PSL Slot Machine accepts a 4th
or 4th and 5th coin/token/credit wager.
†If your PSL Slot Machine has a progres-
sively illuminated 4th or 4th and 5th
coin payline table.*

Verify as the lamp testing continues that the corresponding lamp is illuminated when its numeric code is displayed. If it does not, chances are the lamp is burned out and needs replacement.

The final phase of the test checks the mechanical coin routing devices. If your PSL Slot Machine is equipped with a mechanical "whisker" type coin-in switch, the code number "500" will display in the WINNER PAID window when the lockout solenoid is energized. (NOTE: If you have an electronic coin comparitor, this verification test does not take place.) The code will then change to "501" as the diverter solenoid is energized for three times.

## 2.3.3  TEST MODE 3 - INPUT TEST

As well as output signals, the game PCB receives and acts on input from various buttons and switches associated with the play of the game. This test mode state verifies that input is being received and understood by the microprocessor.

After selecting TEST MODE 3, begin activating the switches on the PSL Slot Machine to verify proper input to the game PCB. A numeric code displays in the WINNER PAID window corresponding to the input from each switch and button. Table 2-C shows the switch/button code correspondence.

| CODE | BUTTON/SWITCH |
|------|---------------|
| 101 | Coin Drop Switch |
| 102 | External Keyswitch |
| 103 | Attendant Button |
| 105 | BET 1 Button |
| 106 | MAX BET Button |
| 107 | COLLECT Button |
| 108 | SPIN Button |
| 109 | Hopper Coin-Out Sw. |

Table 2-C

If the LED in the WINNER PAID window fails to show the corresponding code when the appropriate button or switch is activated, it indicates that the input signal is not being received on the game PCB from that switch/button. Failure to communicate signals is an indication of a circuitry failure or switch/button failure and requires diagnostic work to find the cause of the breakdown.

To exit TEST MODE 3, press the TEST button again to access TEST MODE 4.

## 2.3.4  TEST MODE 4 - HOPPER TEST

This test mode state verifies the operation and coin counting ability of the hopper. After TEST MODE 4 is selected, the hopper should dispense ten (10) coins or tokens into the coin tray. As coins are dispensed, the coin count is shown in the WINNER PAID window. Physically count the coins to verify the that this machine count is accurate

## 2.3.5  TEST MODE 5 - GAME RECALL

The memory software of the PSL Slot Machine stores the reel symbol positions, coins/tokens/credits wagered, payout amount, and error conditions for the last eight games played on the machine. TEST MODE 5 allows you to recall and display this information, which is particularly helpful in situations where a player disputes the outcome of a one or more games.

After selecting TEST MODE 5, the PSL Slot Machine will go to the situation at the end of the present game. The game "number" (i.e., 1) will display in the LAST GAME window and the reels will spin and stop at their positions at the end of that game. The following infrmation will be displayed.

- The number of coins/tokens/credits wagered will display in the THIS GAME window.

- Any payout amount will be displayed in the WIN-NER PAID window.
- The status of credit (i.e., cleared) and any amount cashed out.
- Any error situation that may have occurred will display in the large Dot Matrix array at the top of the front game door. If any error occurred three times in a game, the error message will flash two time in the Dot Matrix array.

After a short delay, the first-most previous game (i.e., "2" displayed in the LAST GAME window) will repeat the same sequence as outlined above. This automatic procedure will continue until the eighth-most previous game displays its associated data, then the reels will return to the positions of the last game played on the machine and the LAST GAME/THIS GAME windows will display the numeral "0".

> NOTE: Game #1, the most recent game played and displayed by this test should match the reel positions of the reels when TEST MODE 5 was initiated. Any difference in reel position indicates improper reel stopping due to either a mechanical or electronic problem or tampering by the player.

## 2.3.6 TEST MODE 6 - REEL STOP POINT TEST

TEST MODE 6 verifies all the possible combinations of physical stops on the reels. With the PSL Slot Machine three-reel configuration, there are thirty-three possible combinations that can align on the single horizontal win line. Using this test state makes it possible to verify reel strip alignment, proper reel physical stop position, and to make sure the correct reels have been installed with the machine to match the game software.

Begin this test by selecting TEST MODE 6. After the customary delay, the reels will spin and halt at stop #33. The numeral 33 will display in the WINNER PAID window, and abbreviated symbol names will display on the main Dot Matrix message area on the front door (i.e., BAR BLK 5BR for single-bar, blank, and five-bar alignment). After a short delay, the reels will spin and halt at stop #32. The process will continue until all possible alignments are shown. The reels will then go to position #33 once more, then spin and halt at the positions the reels were in when the test was started.

### 2.3.7 TEST MODE 7 - GAME PLAY

TEST MODE 7 allows you to play simulated games on the PSL Slot Machine without affecting the coin meters. Select the test state as usual, and with the door open, insert coins in the coin acceptor. These coins/tokens will exit through the drop routing instead of going to the hopper routing, so you may want place some sort of catching device (bucket or wadded towel) below. All game aspects will operate as they normally would; the MAX BET and BET 1 buttons let you wager available credits, the SPIN button and handle let you initiate a game, any winning reel combination will cause the machine to act just as if a real win had occurred with the win amount displayed in the WINNER PAID window. The only button that is inoperative is the COLLECT button that would normally convert credits to coin payouts from the hopper.

After playing a few games and verifying that the PSL Slot Machine is operating correctly in an actual play scenario, you can exit TEST MODE 7 by pressing the TEST button again. The main Dot Matrix array will then display TEST MODE 8. You can then select the next SELF-TEST MODE state (i.e., TEST MODE 15) for further testing.

### 2.3.8 TEST MODE 15 - MODEL INFORMATION

This SELF-TEST MODE state verifies that the game model number, the payout percentage, and the game EPROM associated with the PSL Slot Machine match your order. After accessing TEST MODE 15, the data will display in the following order:

| | |
|---|---|
| MODEL NO. | XXXX-X |
| PERCENTAGE: | XX.XX |
| EPROM | XXXX-X-XXXX |

This model/percentage/EPROM information should match your order exactly. If not, contact Takasago Distributing Company to rectify the problem.

### 2.3.9 TEST MODE 16 - WIN COMBINATIONS AND PAYOUTS

TEST MODE 16 is used to verify the correspondence of winning reel symbol combinations to the payout schedule shown on the top or bottom glass. This is a secondary verification that the reels, game EPROM, and payout schedule are all correct.

After selecting TEST MODE 17, the automatic procedure will show the top pay reel symbol combination in the abbreviated

**PSL Series Slot Machine**

*19*

format on the main Dot Matrix array (e.g., GR7 GR7 GR7). At the same time, the payout for that combination will display in the WINNER PAID window. After a short delay, the next highest winning combination will display with its corresponding payout award. The process will continue until all winning combinations are shown with their corresponding payout awards.

## 2.3.10 EXITING SELF-TEST MODE

It is not necessary to run all the test states when using the SELF-TEST MODE; you need only run those tests deemed necessary. You can also abort any test in progress by simply closing the game door.

To exit the SELF-TEST MODE, wait until the name of one of the states is flashing on the main Dot Matrix array on the front game door. Then, simply close the game door so that the magnetic door sensor's contact is closed. The PSL Slot Machine will then enter the idle state, ready for normal game play.

## 2.5 PROGRAMMING

In addition to running automatic testing of the PSL Slot Machine, the SELF-TEST MODE is also used to program some the of the functions of the game that can be customized to fulfill your needs. These include the following:

- Payout level setting.
- Jackpot payout level setting.
- Maximum accumulated credit setting.
- Main Dot Matrix array optional message.

When you define the values for these parameters you are, in effect, programming the game EPROM just like a computer. The test states that are used for game EPROM chip programming are TEST MODE 8, 9, 10, 11 and 14. TEST MODE 12 is not used in the PSL Slot Machine at this time but is reserved for future software enhancements. TEST MODE 13 is reserved for a future addition of an optional printer to the PSL Slot Machine when it becomes available. A separate addendum will be available for the eventuality.

The following paragraphs will instruct you in setting the values of the software programming parameters so that the PSL Slot Machine serves you in the best manner. Accessing TEST MODE 8, 9, 10, 11, and 14 is done as explained in Steps 1-3 in paragraph 2.1 above. After accessing the SELF-TEST MODE, press the TEST button on the control panel repeatedly

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