until you come to the TEST MODE state you wish to program. When you have finished programming the PSL Slot Machine, closing the front game door exits the SELF-TEST MODE and returns the machine to the idle state, ready for game play.

2.4.1 TEST MODE 8 - PAYOUT LEVEL SETTING

Before defining the maximum value in coins that will be paid from the hopper or credited to the credit account after a win, refer to paragraph 3.2.5 of Chapter 3 to read about the use of DIP switch #7 on the game PCB.

Switch #7 controls whether the machine is configured for MAXIMUM PAY or PARTIAL PAY. MAXIMUM PAY (i.e, switch #7 in the ON position) means the machine will pay all the win amount or collect amount up to the value you set with TEST MODE 8 (which is called the MAX PAY LEVEL). If a win amount or collect amount exceeds the value defined for TEST MODE 8, the machine will pay nothing; the PSL Slot Machine will lock up, enter a hand-pay state, and the attendant lamp on the candle will illuminate. The attendant pays the amount owed the player (as indicated by the I.O.U. on the main message Dot Matrix array) and resets the machine with the external keyswitch. Note here that win payment can be coins for the hopper if the machine is configure to play in the CASH mode, or the win amount can be credits added to a credit account if the machine is configured to play in the CREDIT mode. (Refer to paragraph 3.2.2 in Chapter 3 for explanation of CASH and CREDIT mode play.)

The PARTIAL PAY setting on DIP switch #7 (i.e., OFF) means that the machine will pay up to the amount defined for TEST MODE 8 for win or collect amounts exceeding the MAX PAY LEVEL; the remainder of the payment owed the player is hand paid by the attendant. For example, if switch #7 on DIP DS-1 is in the OFF position and the game was in the CASH mode, and the value defined for TEST MODE 8 was set at 250, and a player hit a winning reel combination that paid 300 coins, the hopper would pay only 250 coins, then enter the hand pay state. The attendant would then hand pay the player 50 coins..

To define the MAX PAY LEVEL, access TEST MODE 8. After the customary short delay, the value presently defined is displayed in the WINNER PAID window on the front game door. The left-most digit will be flashing, indicating that it can be changed. To change its value, activate the drop switch (located at the right-hand base of the game door) once - the digit will increase by one. Continue activating the drop switch to increase the digit to the numeric value you desire. (When "9" is reached, activating the drop switch again recycles the digit's value to "0" again.) When you have the

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value you want, activate the external keyswitch (located on the right-hand side of the cabinet) once in a clockwise direction. The second digit from the left will begin flashing, indicating that it can now be changed.

Continue setting the value of all four digits as described above. When you have the MAX PAY LEVEL amount you want, press the RESET button[1] on the control panel in the machine's interior. This "sets" the value you have defined in the game's memory.

2.4.2 *TEST MODE 9 - JACKPOT PAYOUT LEVEL SETTING*

This programming parameter acts just like TEST MODE 8, only it applies to the MAX JACKPOT PAY LEVEL in the event the top pay reel symbol combination is "hit" on the machine. It allows you to limit the amount the PSL Slot Machine pays in the event of a top jackpot. In jackpot situations, this parameter overrides the normal operation of TEST MODE 8.

To define the value for TEST MODE 9, follow the procedures outlined in paragraph 2.4.1 above. Remember to press the RESET button after defining the value to lock that value into memory.

2.4.3 *TEST MODE 10 - MAXIMUM CREDIT ALLOWED*

NOTE: In order for this programming parameter to have any validity, the machine must be configured for CREDIT mode play with DIP switch #2. See paragraph 3.2.2 in Chapter 3 for a full explanation of CASH/CREDIT mode.

To limit the amount of credit a player can accumulate, use TEST MODE 10 to define a value. Again, this parameter is programmed just like TEST MODE 8 and 9. Refer to paragraph 2.4.1 above for programming instructions. Remember to press the RESET button after defining the value to lock that value into memory.

Whenever the value you define for TEST MODE 10 is exceeded by a win amount, that win amount is paid in coins or tokens from the hopper. For example, if the value of this parameter were set to 500 a player had accumulated a credit

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[1] If your PSL Slot Machine is equipped with a single, rocker-style switch, lift the switch up once to the RESET position and release it.

account on the machine of 450, a win of 60 coins would all be paid from the hopper. However, if the player had a win amount of 40, that amount would be added to the credit account for a total of 490 coins/tokens.

> **IMPORTANT NOTE:** Make sure the value of this parameter never exceeds the value of TEST MODE 8 if the PSL Slot Machine is set for PARTIAL PAY with DIP switch #7. If it is set higher, unnecessary lock ups and hand pays will occur.

2.4.4 TEST MODE 11 - COIN TIMING

One of the many anti-cheating features of the PSL Slot Machine is its ability to assess the time it takes for a coin or token to activate the coin-in switch. This feature effectively stops the use "strung" coins by cheaters in an attempt to play games and win without actually wagering[2]. Any coin or token that activates the coin-in swithc for more or less time than the maximum/minimum time values set for TEST MODE 11 will cause the PSL Slot Machine to enter an error state in which the machine will lock up, sound an alarm, and notify the attendant that a COIN IN TILT has occurred (see paragraph 5.4.1 in Chapter 5).

TEST MODE 11 allows you to see the closure time (in milliseconds) of the coin-in switch and adjust the maximum/minimum allowable closure time. Access TEST MODE 11 in the usual manner. When the Dot Matrix array stops flashing, insert a coin/token in the coin acceptor. It will pass through the coin-in switch assembly and be routed to hopper chute. (NOTE: Keep the game door open at about a thirty degree angle and the coin/token will fall into the coin tray instead of on the floor or inside the game cabinet.) The amount of time in milliseconds that the coin/token closed the switch is shown on the LED in the WINNER PAID window.

When the PSL Slot Machine was shipped from the distributor, the maximum/minimum closure time was set for the denomination of the game type you ordered. If you change the denomination of a machine (e.g., 25¢ to $1.00), you need to adjust the coin-in maximum/minimum switch closure time to match the new coin type and diameter. To adjust the switch time, first access TEST MODE 11 and drop a few coins/tokens

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[2] An electronic coin comparitor also stops the use of slugs or incorrect denominations, as it measures the magnetic flux impedence of the sample coin inserted in the unit. Any object of dissimilar metal from the sample coin/token is automatically rejected by the comparitor and routed to the coin tray.

into the coin acceptor. Note the least and most time it takes for the coins/tokens to close the coin-in switch. Next, press the RESET button on the interior control panel once; the maximum acceptable time of coin-in switch closure is shown in the WINNER PAID window. To adjust this time to suit the new denomination, use the method of value adjustment as covered in paragraph 2.4.1 above. When you have the maximum coin-in switch closure time you want, press the RESET button on the control panel in the machine's interior. This "sets" the value you have defined in the game's memory. After a moment delay, the minimum acceptable time of coin-in switch closure is shown. Adjust this value as well, then press the RESET button again to "set" this value.

If you are adjusting maximum/minimum switch times, do not make the time value range too tight. You should allow a 20% leeway above and below the values you adjust. For example, if you find when assessing switch closure time that the most time it took for a coin/token to close the coin-in switch was 40 milliseconds, and the least time it took for a coin/token to close the coin-in switch was 20 milliseconds, you would set the maximum switch closure time to about 48 to 50 milliseconds and the minimum time around 14 to 16 milliseconds. This will eliminate a lot of "false alarm" COIN IN TILT errors as players drop coins into the coin acceptors at different speeds, etc.

2.4.5 TEST MODE 14 - OPTIONAL MESSAGE PROGRAMMING

NOTE: In order for this programming parameter to have any validity, the machine must be configured for use of an optional message with DIP switch #8. See paragraph 3.2.6 in Chapter 3.
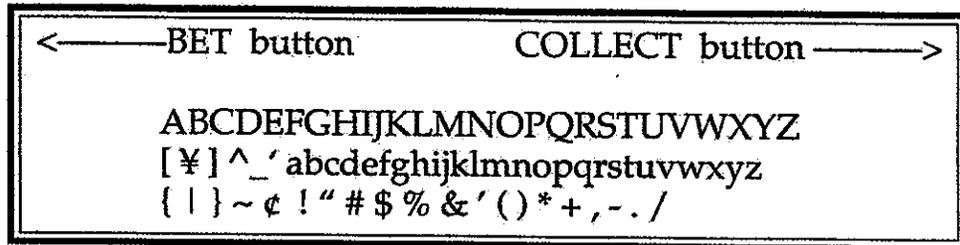
You can program a customized message to scroll from right to left across the main message Dot Matrix array on the game front door. This message will display in the idle state (i.e., no game activity) along with the usual INSERT COIN/BET CREDITS/Denomination messages that are flashed off and on. Up to 200 characters (including blanks) can be programmed for display.

Access TEST MODE 14 as usual. After a short delay, the message already programmed will display on the main message Dot Matrix array with the first letter or numeral of the message flashing. The buttons on the front game door are used to change a character, move to another character, or set the character in memory.

MAX BET and SPIN buttons: These two buttons are used to scroll the message and select the character you want to change. Pressing the MAX BET button scrolls the message

from right to left, one character per press. The SPIN button scrolls it from left to right. As the message moves, the character in the center of the Dot Matrix array becomes the flashing character that can be changed.

COLLECT and BET buttons: The COLLECT and BET buttons are used to change a character. The COLLECT button moves the choice of character to the right in the character set shown below, the BET button to left.

```
+-------------------------------------------------------+
|  <————BET  button              COLLECT  button ————>  |
|                                                       |
|  ABCDEFGHIJKLMNOPQRSTUVWXYZ                            |
|  [ ¥ ] ^_' abcdefghijklmnopqrstuvwxyz                 |
|  { | } ~ ¢ ! " # $ % & ' ( ) * + , - . /              |
+-------------------------------------------------------+
```

NOTE: The blank (i.e, no character) is located between the cent sign (¢) and the exclamation point (!).

Depending on the character displayed, press either the COLLECT or BET button, whichever will get you to the character you want in the least amount of time.

CALL ATTENDANT button: This button sets the chosen character in memory. After you have changed a character to the one you desire, press the CALL ATTENDANT button. If you do not press this button, the character will change back to the original character when you scroll left or right with the MAX BET or SPIN buttons.

After you have programmed the message to your liking, press the RESET button on the interior control panel. The SELF-TEST MODE will move to TEST MODE 15.

Chapter 3

DIP Switch Programming

3.0 DIP SWITCH OVERVIEW

In addition to the programming you can accomplish using several of the SELF-TEST MODE states (as outlined in Chapter 2), you can also configure game aspects of the PSL Slot Machine using a number of DIP switches on the PC boards in the machine. DIP (Dual Inline Package) switches monitor how and where voltage input is routed on a PC board. Depending on the setting of a DIP switch, certain pre-programmed modes of operation are either activated or not on IC chips on the board. DIP switch programming is limited to "either/or" types of operation; they are not used to set ranges of values such as the SELF-TEST MODE states. Therefore, their operation can be compared to a light switch; ON turns a lamp on in a room, OFF turns the lamp off.

The following paragraphs cover the location of the DIP switches you can use and what game aspect each controls. Keep in mind that the setting of certain DIP switches is dependent on values defined for SELF-TEST MODE states. When there is an interdependency, the implications will be discussed.

3.1 DIP SWITCH BANK #1 (DS-1) ON THE MAIN PCB

DIP Switch bank #1 is located on the main PCB (PSL-1A). Turn off the power to the PSL Slot Machine and remove the main PCB (located beneath the control panel in the machine's interior). Place the PCB flat on a work table with the edge connector towards you. DS-1 is located on the front of the board, just to the right of connector CN-A and to the left of insert/removal assist level as seen in the figure on the following page.

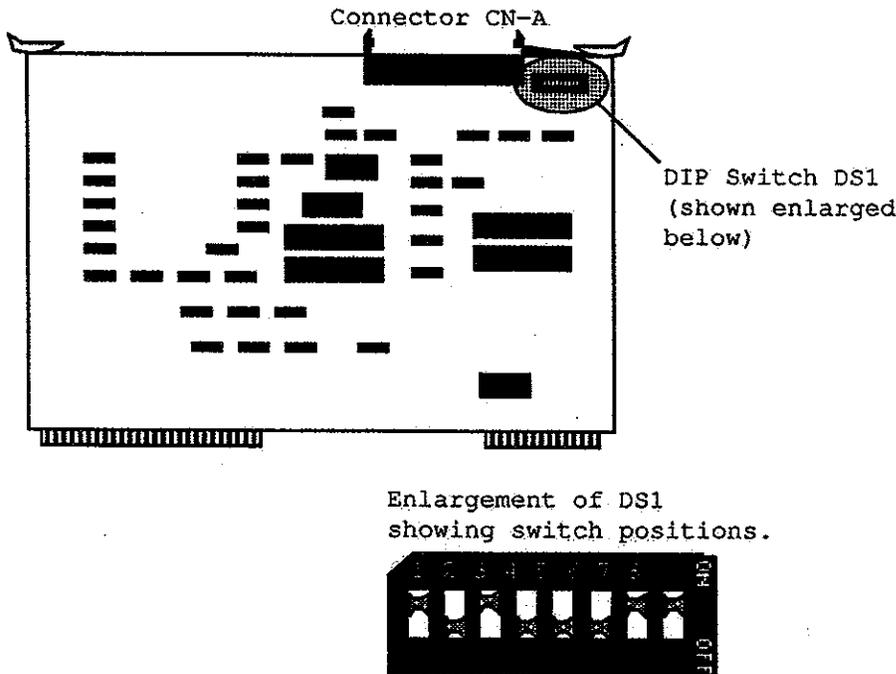Enlargement of DS1
showing switch positions.

Figure 3-A

There are eight individual switches controlling aspects of game play on the PSL Slot Machine. Their functions are defined below:

- Switch #1 - Reel Spin Auto/Manual Start
- Switch #2 - Cash or Credit Pay
- Switch #3 - Jackpot Type
- Switches #4 through #6 - Denomination
- Switch #7 - MAX or PARTIAL Pay
- Switch #8 - Optional LED Message

Control of the switch's associated game aspect is determined by whether the switch is in the ON position (i.e., closed) or OFF position (i.e., open). To change a switch's position, use a sharp, pointed object such as a bent paper clip or small phillips screwdriver to push the switch to the desired setting[1].

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[1] Never use a pencil to change a switch's status. The point of the lead can break off and, as the clay/graphic compound is conductive to a certain degree, the shard can cause a short on an IC chip or board component connection.

3.2 DIP BANK DS-1 PROGRAMMING DEFINITIONS

Following is a description of each of the individual DIP switches and their functions. Be sure to understand the implications of changing a switch's status before doing so. A change of one switch can change to entire operation of the PSL Slot Machine.

3.2.1 DS-1/SWITCH #1 - REEL SPIN CONTROL

Switch #1 on DIP DS-1 controls how the reels are activated after the player presses the MAX BET button on the game front door. This, of course, requires that the game is configured for Credit play and that the player has sufficient accumulated credit to allow the MAX BET button to be used. If the game is configured for Cash play, or the player wagers coins/tokens, or the player presses the BET 1 button, or if the MAX BET button is not activated, automatic reel spin will not take place.

With Switch #1 in the ON position, the reels will automatically start their game spin when the MAX BET button is pressed. With Switch #1 in the OFF position, the player is required to pull the slot handle or press the SPIN button after pressing the MAX BET button.

3.2.2 DS-1/SWITCH #2 - CASH OR CREDIT PLAY

You can configure the PSL Slot Machine to play in the Cash or Credit mode with this switch. When Switch #2 is in the ON position, the game play is configured for CASH; all wagers are made in coins/tokens and all win payouts are paid directly from the hopper at the end of the game (dependent on the setting of SELF-TEST MODE states #8 and #9).

If Switch #2 is in the OFF position, the game play is configured for CREDIT. Initial wagering is done by the player with coins/tokens until a win occurs. The win amount is then put into a "credit account" and the amount of credit (in coins/tokens) is displayed in the CREDIT window on the front glass. The player can choose to wager credits (by pressing the MAX BET or BET 1 buttons) or collect the credit (i.e., convert credits to coins/tokens paid from the hopper) by pressing the COLLECT.

> IMPORTANT NOTE: Make sure the value of TEST MODE 10 (Maximum Credit Amount) never exceeds the value of TEST MODE 8 if the PSL Slot Machine is set for CREDIT play. If it is set higher, unnecessary lock ups and hand pays will occur

when players attempt to "cash out" by pressing the COLLECT button. Refer to Chapter 2 for explanations of these two TEST MODE states.

3.2.3 DS-1/SWITCH #3 - JACKPOT TYPE

The PSL Slot Machine supports up to eight different progressive jackpot combinations. In other words, the machine is capable of sending eight different and distinct electronic signals to a progressive control computer when one of eight possible reel symbol combinations align. Paragraph 3.3.2 below describes how you can configure the DIP switches #3, 4, and 5 on DS-2 to choose from one to eight progressive jackpot signal transmissions.

Switch #3 on DS-1, however, controls whether the PSL Slot Machine is configured for a progressive or normal jackpot. When the switch is in the ON position, the machine is limited to the pay table jackpot (i.e., the highest jackpot reel symbol combination shown on the front glass). If switch #3 is in the OFF position, the PSL Slot Machine is configured for progressive jackpot play. Depending on the settings of switches #3, 4, and 5 on DIP DS-2 (located on the sub-PC board PSL2), a progressive "hit" signal can be sent to the progressive control computer[2].

3.2.4 DS-1/SWITCH #4, 5, AND 6 - DENOMINATION

The PSL Slot Machine is capable of using a wide range of denominations, including tokens, for game play. Switches #4, 5, and 6 on DIP DS-1 allow you to change the coin denomination for play. However, changing a machine from using one denomination to another requires a number of other changes, including hopper, front door glass, and possible change in schedule/game EPROMs. When denomination is changed, the new denomination is flashed on the main LED array along with the usual INSERT COIN message.

The table on the following page shows the setting of switches #4, 5, and 6 for different denominations.

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[2] Progressive jackpot configuration of a machine is dependent on the game schedule purchased and interface hardware added to the PSL Slot Machine to give it progressive jackpot capabilities. Contact your Takasago sales representative for information regarding progressive jackpot configuration.

Takasago