

Bally 5000™



OPERATOR INSTRUCTIONS MANUAL

Bally

MANUFACTURING CORPORATION
GAMING DIVISION

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-WARNING-

THIS MACHINE MUST BE GROUNDED! FAILURE TO DO SO MAY RESULT IN THE DESTRUCTION OF ELECTRONIC COMPONENTS.

RADIO INTERFERENCE NOTICE: This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the Instruction Manual, this equipment may cause interference to radio communications. As required by FCC regulations, this equipment has been tested and found in compliance with Subpart J and Part 15 of FCC regulations, which are designed to provide reasonable protection against such interference. However, although this equipment complies with all applicable FCC regulations, operation of this equipment in a residential area may cause interference, in which case the equipment user will be required to implement whatever measures may be necessary to eliminate said interference at his/her own expense. BALLY MANUFACTURING CORPORATION is in no way liable for any additional expenses involved with elimination of interference, or for any consequential damages or injuries.

- WARNING -

This equipment is to be installed, maintained, and serviced ONLY by BALLY-trained or BALLY-supervised personnel. All in-the-field modifications must be performed by, or under the supervision of, BALLY personnel.

This machine is intended for use as a gaming device for amusement only, to be sold in jurisdictions permitting such devices. Distributors, owners, operators, and users are not to modify the machine for any other use.

BALLY Manufacturing Corporation maintains a toll free telephone number which can be used to obtain service information for BALLY manufactured equipment at your location.

1-800-HOT SLOT

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-WARNING-

DO NOT PLUG MACHINE INTO POWER SOURCE AND
TURN POWER ON, UNTIL YOU HAVE READ
SECTIONS 1 AND 2.

NOTE: The word "user(s)" is defined in this manual as any person, partnership, company, or corporation, and/or their legal representatives, who own, operate, service, maintain, and derive profit from their association with this equipment. The word "player" is defined in this manual as any person who deposits money, tokens, or their equivalents into the machine described in this manual for the purpose of playing the game offered by the machine as defined by the rules and odds set by the machine's user(s).

PURPOSE

This manual contains complete information on the BALLY System 5000 Slot Machine (Fig. 1-1). It is written for the users, whether they are set up personnel, owners or service technicians. By following each Section's step-by-step procedures, the user can easily and quickly get the System 5000 Slot Machine ready for play.

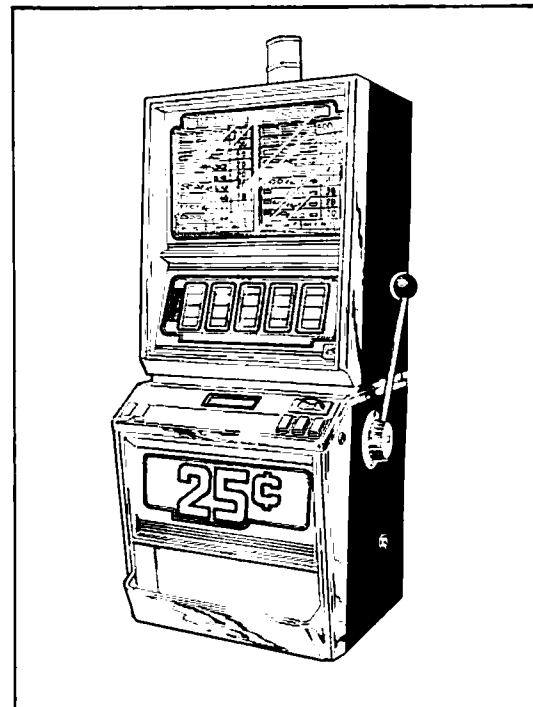


Fig. 1-1

ABOUT THE SYSTEM 5000 SLOT MACHINE

Some of the features of the System 5000 Slot Machine are a trim cabinet design, ribbon cable for internal wiring, stepping motor driven reels, and a vacuum-fluorescent display message center. The 40 character Message Center displays information about the current game, diagnostic tests, tilts, bookkeeping meters, and the keypad option settings. The special use of solid-state microcomputer electronics and software achieves the degree of security, integrity, and reliability required by the modern day gaming industry.

1. INTRODUCTION

ORGANIZATION

This manual is designed in a sequential order:

- Inspection before power up
- Adjustments, initialization, and testing after power up
- Game operations, meters, and win records
- Troubleshooting and maintenance
- Machine Options, for example, double progressive operation

There are important WARNING and CAUTION statements contained throughout this text. To insure the safety of the user and prevent damage to system components, all such statements MUST be followed exactly.

The detailed "TABLE OF CONTENTS" followed by the "LIST OF ILLUSTRATIONS" and the "LIST OF TABLES" are quick references to specific information for the user. Within this manual, "Call a senior service technician" appears where additional expertise is needed. Please refer to the "GLOSSARY" when uncertain of any terminology.

HELP

For any questions, please contact your BALLY Distributor or refer to the service information number in the front of this manual on page 11.

2. LOCATION AND SET UP

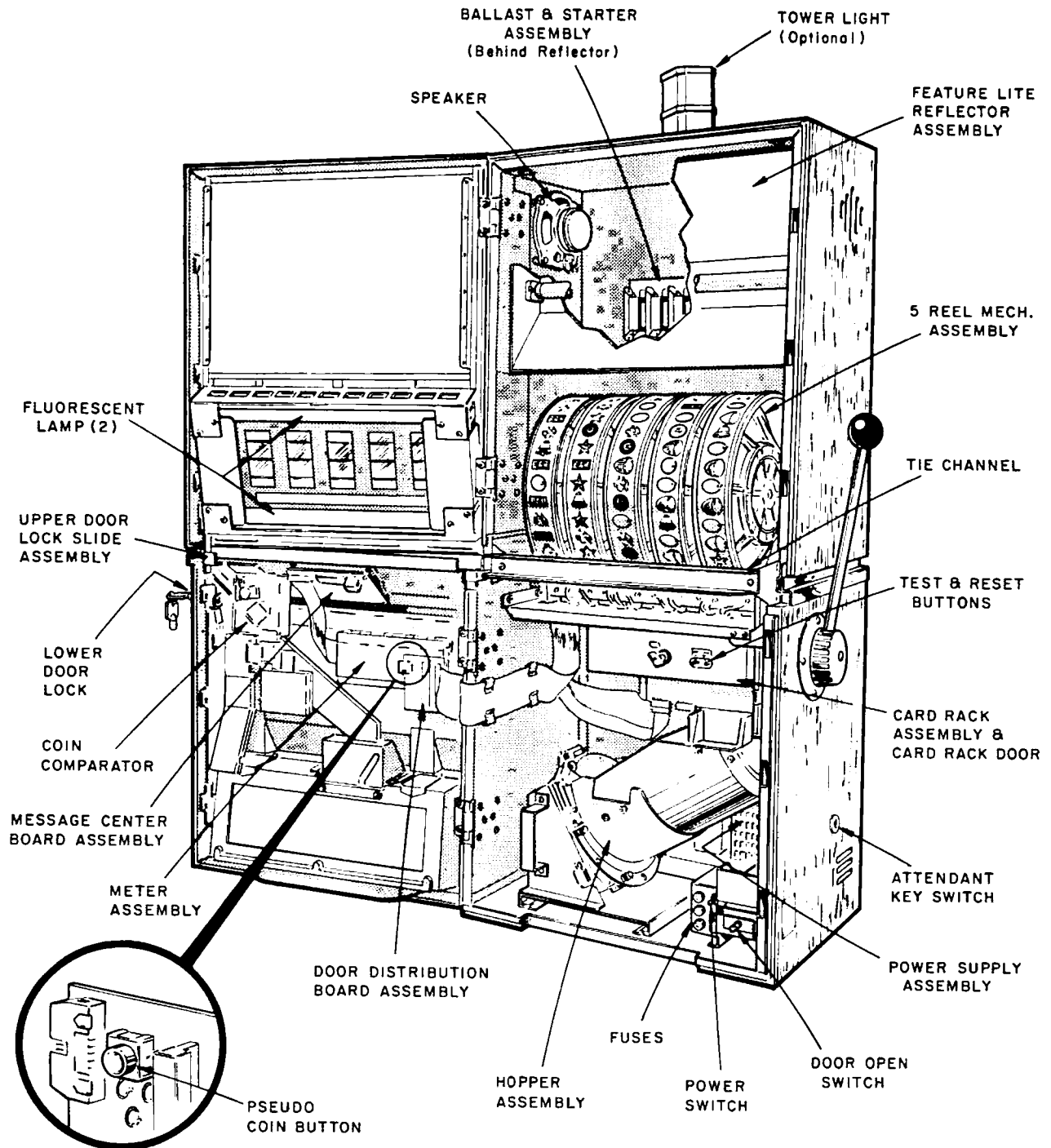


Fig. 2-1

2. LOCATION AND SET UP

Inspect Before Power Up

When inspecting the BALLY System 5000 Slot Machine, follow these steps:

1. Carefully unpack and remove all parts.
2. Inspect all components for any apparent damage.
3. Check packing list to be certain that all components have arrived.
4. Remove shipping cleats from the bottom of the cabinet.
5. Open lower and upper doors.
Turn door keyswitch. Pull the lower door open. Push up on the lock slide handle at the bottom right of the upper door. Pull the upper door open. (See *Fig. 2-1*)
6. Check that the power cord is routed out of the machine properly.

-CAUTION-
DISCHARGE BODY STATIC TO AVOID ANY
INTERNAL DAMAGE TO THE COMPONENTS.

7. Read APPENDIX 3 on Static Control before checking that all connectors are joined. Plug in any connectors found loose. If the connectors will not go on easily and the keys are aligned, they either do not belong there or are damaged.

- CAUTION -
DO NOT FORCE PLUGS ONTO CONNECTORS. DO
NOT FORCE PLUGS TOGETHER. ALL CONNECTORS
AND PLUGS ARE KEYED TO GO TOGETHER ONLY
WHEN ALL PINS ARE PROPERLY ALIGNED.

8. Verify that all printed circuit boards (PCBs) are firmly seated in their connectors.
9. Check all sub-assemblies and verify that they are securely mounted.
10. Remove the packing from the reels. Check that all reels spin properly. If the reels are not spinning freely, check for the cause (foreign matter, cables, etc.).
11. Empty the hopper of any packing, etc.
12. If new locks are installed, check that no wires are pinched causing short circuits.

Inspect Before Power Up (cont'd)

13. Check that the handle is not loose or damaged. To replace a handle, see Section 5, MAINTENANCE AND REPAIR under Replace Handle.

- WARNING -

DO NOT ALLOW THIS MACHINE TO BE OPERATED BY PLAYERS IF THE HANDLE IS LOOSE, BENT, CRACKED, OR OTHERWISE DAMAGED OR WEAKENED. INJURY TO PLAYERS MAY OCCUR IF OPERATOR(S) ALLOW A MACHINE WITH A DAMAGED OR WEAKENED HANDLE TO REMAIN IN SERVICE.

14. List all problems that you cannot correct. Contact the nearest BALLY distributor for assistance in making any claim against the shipper or in obtaining replacement parts.

Environmental Requirements

Game Power: 110 to 120 VAC @ 50/60 Hz

Power Supply Input: 97 to 132 VAC @ 44/440 Hz

Power Supply Output: +5 VDC, +12 VDC, -12 VDC, +24 VDC

Average Current Draw: 2.0 Amps

Maximum Current Draw: 2.5 Amps

Maximum number of machines on a 20 Amp circuit: 5

- WARNING -

PLUG THE MACHINE INTO A GROUNDED CIRCUIT.

Minimum Ambient Temperature: 40 degrees F (4 degrees C)

Maximum Ambient Temperature: 100 degrees F (38 degrees C)

Maximum Relative Humidity: 90%

Heat From Machine: 800 BTUs

2. LOCATION AND SET UP

Environmental Requirements (cont'd)

Space Required: depth x width
18.75" x 17.75" (47.625cm x 45.085cm) minimum
18.75" x 20.25" (47.625cm x 51.435cm) maximum

Machine Height: low boy 33.25" (84.455 cm)
chop top 41.00" (104.14 cm)
casino top 46.00" (116.84 cm)
high boy 52.00" (132.08 cm)

Minimum Spacing Between Machines: 6.5" (16.51cm)

- WARNING -

THE SPACING DIMENSIONS CONTAINED IN THIS MANUAL ARE MINIMUMS. TO PREVENT POSSIBLE PLAYER INJURY, MACHINES MUST BE SPACED NO CLOSER THAN LISTED.

Power Up

Follow these steps in powering up the machine.

1. Plug in the machine to the grounded power source. The convenience outlet is active.
2. Flip the power switch ON. A vital functions self-test occurs on the microprocessing unit (MPU) board. The general illumination lights turn ON. The Message Center turns ON.
3. Close and lock the door to check that the machine has powered up correctly. Since the door was opened during power down, the following messages alternate on the Message Center.

DOOR OPEN
DURING POWER DOWN

TURN KEYSWITCH
TO CONTINUE

Power Up (cont'd)

4. Turn the keyswitch on the right side of the machine. A reset occurs and the machine enters the Game Over State. On the Message Center, the upper line messages alternate while the lower message remains constant.

GAME OVER
LAST IN.3

INSERT COIN
LAST IN.3

NOTE: If a malfunction occurs, see Section 4, TROUBLESHOOTING, under Power Up Malfunctions.

5. Take the machine's meter readings for your records. See Section 3, MACHINE OPERATIONS.

Door Open Operation

The following is a list of messages and conditions that exist when the machine door is open.

1. When the door is unlocked, "DOOR UNLOCKED" appears on the Message Center. A sound, if optioned occurs and repeats at frequent intervals. The lower portion of the tower light turns ON.
2. When the lower door is opened, "DOOR OPEN" appears on the Message Center when the unlocked door is opened and remains visible until the door is closed and locked.
3. Coins are locked out when the lower door is detected unlocked.
4. Coins are not dispensed from the machine, except during the hopper test. See Diagnostic Tests under TEST #4 in this Section.
5. The automatic spin option does not function.
6. The bookkeeping meters do not increment with the door open, except during Diagnostic TEST #2.
7. If the door is opened during a payout, the following message appears.

CLOSE DOOR TO
COMPLETE PAYOUT

2. LOCATION AND SET UP

Pseudo Coin Game

To make use of the pseudo coin game, follow these steps.

1. Unlock and open the lower door.
2. Press the pseudo coin button (See *Fig. 2-1*) on the door distribution printed circuit board to coin a game. The conditions in the Door Open Operation portion of this Section apply to the pseudo coin game.

The machine feature glass and many machine functions can be checked, for example, the handle mechanism and the paylight sequence.

Any pseudo coinage remaining when the machine door is closed and locked are valid coins in.

Adjust Electronic Coin Comparator

The electronic coin comparator consists of the coin comparator and the electronics package. The coin comparator compares the sample coin or token with each inserted coin or token. This requires sensitivity adjustments for proper operation. See APPENDIX 4 for information on the coin comparator.

Adjust Hopper Counterbalance

1. Fill the hopper with the desired level of coins.
2. Turn the set screw clockwise until the actuator of the micro-switch is in the up position. (*Fig. 2-2*)
3. Turn the set screw counter-clockwise very gradually until the microswitch clicks down. The hopper is set at the given desired capacity.

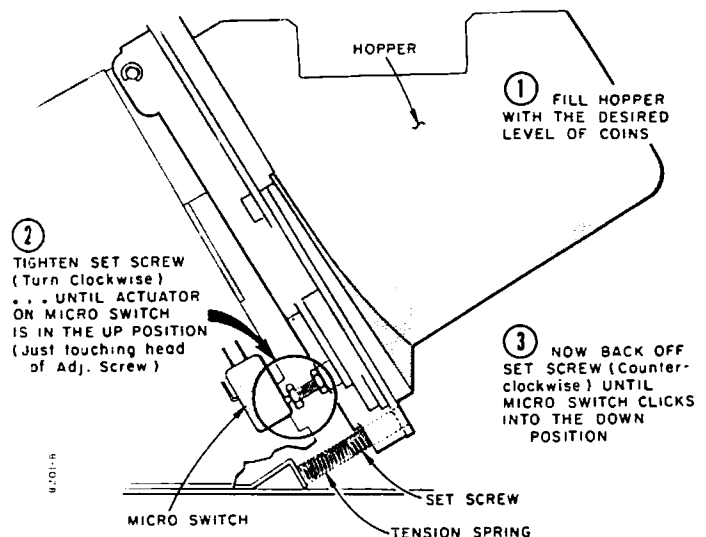


Fig. 2-2

Adjust Volume

Simple sound:

1. Turn the potentiometer located on the backplane above C13 to adjust the volume. (Fig. 2-3)

Deluxe sound:

1. Unlock the card rack door and remove it.
2. Press the "TEST" button on the left front of the sound PCB to check the volume. (Fig. 2-3)
3. Turn the potentiometer located to the right of the "TEST" button to adjust the volume.

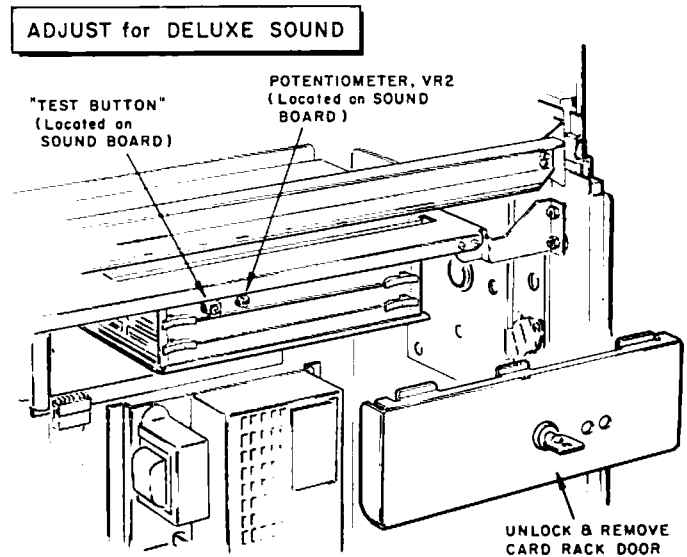
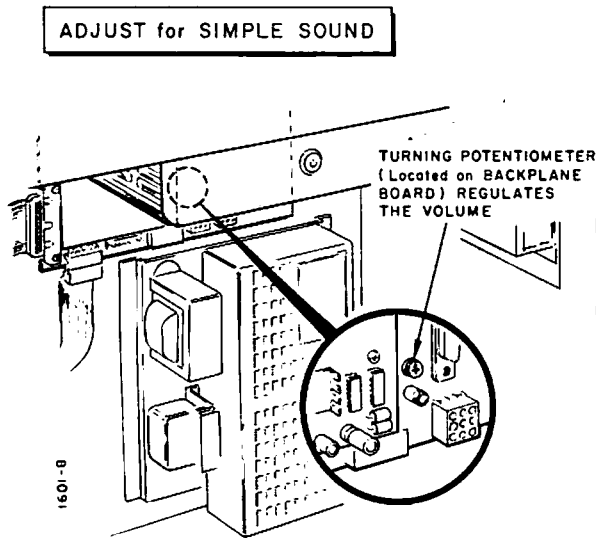


Fig. 2-3

NOTE: See KEYPAD COMMAND/OPTION TABLE in this Section if there is no sound.

Enter Diagnostic Tests

1. Open the door when the machine is in a Game Over or Tilt state.
2. Press the MPU board "TEST" button (See Fig. 2-1) the number of times corresponding to the test number desired. The name of the test appears for about 1 second. See Diagnostic Tests in this Section for the tests and numbers. Pressing the "TEST" button at any time immediately (1) advances to the next test or (2) if in the last test, cycles back to the first test. Sequencing through the test numbers allows any test to be entered in any order.

Exit Diagnostic Tests

1. Press the "RESET" button (See Fig. 2-1) or close and lock the door to exit the diagnostic tests at any time. The machine returns to the Game Over or Tilt state.

2. LOCATION AND SET UP

Diagnostic Tests

TEST #1 Start of New Game:

The following messages appear on the Message Center for about 1 second each.

<u>MESSAGE</u>	<u>DESCRIPTION</u>
S33L3X-MB0	machine model number
XXXXX-X	main program
XXXXXXXXX-X	program personality
06-04-86	date
%CONFIGUR: XX-XX	configuration straps

MACHINE MODEL NUMBER BREAKDOWN TABLE			
S33L3X-MB0 example model number			
Position	Description	Options	Description
S	machine type	S	electronic slot
3	series number	3	standard reels & slots
		4	variably spaced stops
		5	maxi reels
3	maximum number of coins/game	0	if specialty
		More than 9	written description required
L	game type	B	option buy
		L	line pay
		M	multiplier
		U	undefined: written description required
3	number of reels		
X	cabinet size	1	low boy narrow
		2	low boy wide
		3	chop top narrow
		4	chop top wide
		5	casino top narrow
		6	casino top wide
		7	high boy narrow
		8	high boy wide
		NOTE: X appears on the Message Center, but the number is on the machine outside plate.	
MBO	code for the type of winning symbol combination use 0-9 and/or A-Z		

TEST #2 Output Test:

The machine cycles through each outgoing signal (output), turning 1 output ON for 1 second while displaying the port and toggling the bit.

PORT 1 00000001

To stop the test on any output, press and hold the psuedo coin button. Release it to continue.

TEST #3 Input Test:

The Message Center displays "INPUT TEST" until an input is manually activated. As any incoming signal (input) is activated and operating properly, its port and bit appear. The bit toggles as the input is activated for example, when a button is pressed or the handle is pulled.

NOTE: The normally closed switch must be opened then closed before the port and bit appear.

TEST #4 Hopper Test:

"HOPPER TEST" is displayed. The machine pays .10 coins from the hopper, updating the display as each coin is dispensed.

HOPPER TEST PAY 10

If an over pay problem occurs, the display continues to increment and the hopper continues to dispense coins.

The test stops if a problem occurs. One of the following messages appear on the lower line indicating the problem.

HOPPER EMPTY
COIN OUT JAM

2. LOCATION AND SET UP

TEST #5 Reel Function Test:

A "REEL FUNCTION TEST" message appears. The reels spin and stop sequentially at each of the 64 positions. The following message appears.

```
FUNCTION TEST GOOD
000000          000001
```

The left meter records the number of spins with a tilt. The right meter records the spins with no tilt. Upon entering this test, the meters reset to zero. On a spin with a tilt, a message appears indicating (1) which reel, (2) its designated position, and (3) the actual position where the reel stopped.

```
REEL 2 AT 3A RD 75
000001          000001
```

This spin/stop sequence continues until this test is exited.

TEST #6 Reel Tape Test:

A "REEL TAPE TEST" message appears. The reels are stepped 1 position at a time. A message appears for each position as in the following example.

(position)	POS	A	C	C	(symbol)
(stop in memory)	17	17	17	20	(physical stop)

To stop this test at any point, press and hold the psuedo coin button. Release it to continue.

TEST #7 Reel Tilt Record:

A "REEL TILT RECORD" message appears. The meters appear on the Message Center with the number of occurrences per reel.

```
STOP OFF CENTER BIT
000 000 000
```

The meters increment with each occurrence in actual game play and in diagnostic test #5. The meters can only be reset to zero by clearing Safe RAM.

Diagnostic Tests (cont'd)

REEL TILT RECORD TABLE	
Meter	Description
STOP OFF CENTER BIT	The reel stopped on the correct position, but the position is not within the center of the stop. This does not result in a tilt.
ACCELERATION RUNNING DECELERATION	The center of a stop position is not read within the designated steps while the reels are accelerating, running, or decelerating.
WRONG POSITION	A wrong position is read.
MISS START OF STOP	The position to begin the stopping of the reel is not read.
MISS END OF STOP	The position to actually stop the reel is not read.

TEST #8 Slot Communication:

A "SLOT COMMUNICATION" message appears with a revision number on the lower line.

If there are no dual universal asynchronous receiver transmitters (UART's) installed on the MPU board, a "UART's NOT INSTALLED" message flashes.

As the test for short circuits is run, a coin in tone sounds and the lower message flashes.

SLOT COMMUNICATION TESTING FOR SHORTS
--

When this test is complete, the following message appears with the upper message flashing.

TEST WITH LOOPBACK 3:NA 1:NI 2:___ 0:NI
--

NA=not available NI=not installed SH=short in electrical connection

2. LOCATION AND SET UP

Diagnostic Tests (cont'd)

Plug the loopback into each port(s) with blanks on the Message Center to test for good communications. A coin in tone sounds for each port tested. The ports on the Message Center correspond to the plugs on the backplane as follows:

PORT	PLUG
3	J25
1	J24
2	J23
0	J22

The following message appears after all tests are completed.

TESTING COMPLETE
3:NA 1:NI 2:OK 0:NI

If blanks remain next to a port, call a senior service technician.

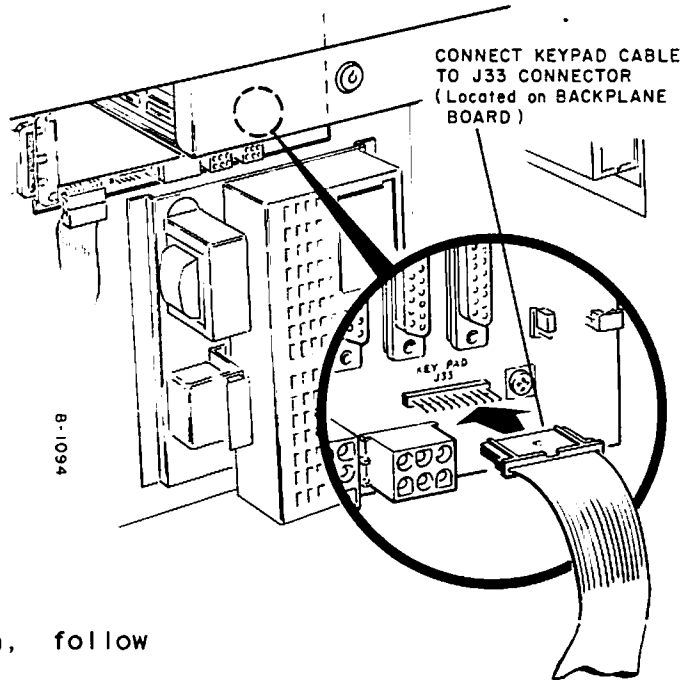
TEST #9 Display Test:

A "DISPLAY TEST" message appears. This message alternates with all dots lighting simultaneously to show the display is working properly.

Initialize Options

The Keypad for the System 5000 slot machines initializes options for the available commands. See the KEYPAD COMMAND\OPTION TABLE and Descriptions and Examples of Options in this Section.

NOTE: Check the machine's display glass with the options set.



To initialize an option, follow these steps.

1. The machine must be in the Game Over state.
2. The credit meter must show "0" credits with the door closed.
3. Open the lower machine door. Connect the keypad to the lower right corner of the backplane PCB at J33 marked "KEYPAD".
4. Press "KEYBD/CLR". (Fig. 2-4)

ENTER COMMAND

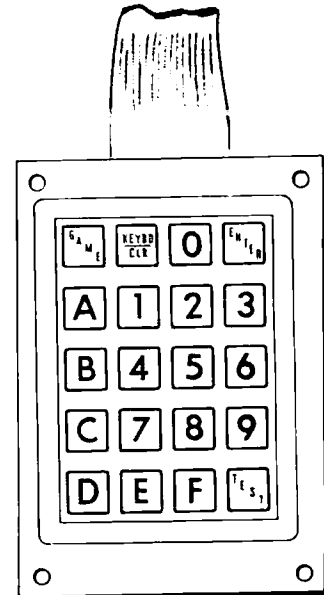


Fig. 2-4

2. LOCATION AND SET UP

Initialize Options (cont'd)

5. Press the numbers corresponding to the command desired. See the KEYPAD COMMAND\OPTION TABLE in this Section. The command and its number appear on the Message Center.

HIGH DROP AMOUNT 54

NOTE: If a problem occurs, see the KEYPAD ERROR MESSAGE TABLE in this Section.

6. Press the numbers corresponding to the option desired. See the KEYPAD COMMAND\OPTION TABLE in this Section.
7. Press "ENTER". The option set appears alternately with the command on the upper line.

SET: 0400 54

8. Continue by pressing the numbers for the next command.

To return to Game Over state, remove the keypad then close and lock the door.

Verify Options

To verify the options set, follow these steps.

1. The machine must be in the Game Over state.
2. The credit meter may show or may not show credits.
3. Open the machine door. Connect the keypad to the backplane PCB.
4. Press "KEYBD/CLR".
5. Press the number for the desired command.
6. Press "ENTER". The present option appears alternately with the command on the upper line.
7. If a change is required, follow steps in Initialize Options.

To return to Game Over state, remove the keypad then close and lock the door.

KEYPAD COMMAND/OPTION TABLE			
Command Number	Command	Option Number	Description
00	SIMPLE/DELUXE SOUND	00	(Default) Simple sound
		01	Deluxe sound—Uses sound board
		NOTE: Flip the sound switch (located on the lower right corner of the backplane) to match the keypad option of simple or deluxe.	
06	COIN LOCKOUT/CREDIT	00	(Default) Coins locked out only when maximum coins in
		01	Coins locked out when credits on credit meter.
07	# OF HANDPAY LOCKUPS	00	(Default) No lockups
		01	One lockup
		02	Two lockups
		03	Three lockups
		NOTE: Used with double or link progressive	
16	MISER TYPE	00	(Default) Miser III
		01	Miser II
		02	No Miser
		NOTE: After setting option and before putting machine in game play, press the "RESET" button to initialize this option.	
27	CREDIT TYPE	00	(Default) Non-credit
		01	Standard credit
		02	Player Selectable Credit

2. LOCATION AND SET UP

KEYPAD COMMAND/OPTION TABLE (cont'd)			
Command Number	Command	Option Number	Description
29	REEL 1 SPIN		The number of revolutions the first reel spins before stopping
		00	(Default) 1.0-2.0 revolutions
		01	1.5-2.5 revolutions
		02	2.0-3.0 revolutions
		03	2.5-3.5 revolutions
		04	3.0-4.0 revolutions
30	SUBSEQUENT REEL SPIN		The number of revolutions for the remaining reels
		00	(Default) 0.0-1.0 revolutions
		01	0.5-1.5 revolutions
		02	1.0-2.0 revolutions
		03	1.5-2.5 revolutions
		04	2.0-3.0 revolutions
32	AUTOSPIN	00	(Default) No autospin
		01	When the door is closed and the maximum coins (credits) are inserted, the reels spin automatically.
34	CREDIT GAME LOCKUP	00	(Default) All wins are paid to the credit meter
		01	All wins are subject to the lockup and drop amounts
			NOTE: When the win amount added to the credit meter is equal to or greater than the credit top limit, the lockup and drop amounts apply leaving the credit meter unchanged.

KEYPAD COMMAND/OPTION TABLE (cont'd)			
Command Number	Command	Option Number	Description
35 36 37 38 39 40	COIN IN SOUND MAX COIN IN SOUND REEL SPIN SOUND REEL STOP SOUND CREDIT PAYOUT SOUND HOPPER PAYOUT SOUND	00 01 02 03	Sound on Sound on Sound on Sound off
			NOTE: Presently, all 3 sound options have the same melody.
41 42 43 44 45 46	ATTENDANT SOUND LOCKUP SOUND SUPER JACKPOT SOUND DOOR OPEN SOUND TILT SOUND ATTRACT SOUND	00-05 06	Sound on Sound off
			NOTE: Presently, all 6 sound options have the same melody.
			NOTE: In New Jersey, the super jackpot sound can not be disabled.
50	SET I.D.	0000 0000- 9999	(Default) The identification number for the machine. Consider a floor plan when assigning a number.

2. LOCATION AND SET UP

KEYPAD COMMAND/OPTION TABLE (cont'd)			
Command Number	Command	Option Number	Description
51	CREDIT TOP LIMIT	9999 0000- 9999	(Default) Maximum number of credits to register on the credit meter
54	HIGH DROP AMOUNT	0400 0000- 9999	(Default) Number of coins paid from the hopper when a win equals or exceeds the High Lockup Amount
55	LOW DROP AMOUNT	0200 0000- 9999	(Default) Number of coins paid from the hopper when a win equals or exceeds the Low Lockup Amount
56	HIGH LOCKUP AMOUNT	0800 0000- 9999	(Default) Number of coins for a machine lockup when a win equals or exceeds this number. High Drop Amount applies.
57	LOW LOCKUP AMOUNT	0400 0000- 9999	(Default) Number of coins for a machine lockup when a win equals or exceeds this number. Low Drop Amount applies.
NOTE: If only 1 lockup and 1 drop amount are desired, set the low and high lockups at the same number and both drop amounts to match.			
NOTE: For a further explanation of options, see <u>Descriptions and Examples of Options</u> in this Section.			

KEYPAD COMMAND/OPTION TABLE (cont'd)																																			
Command Number	Command	Option Number	Description																																
58	COLLECT DROP AMT	0400 0000- 9999	(Default) Number of coins paid from the hopper when the credit meter equals or exceeds the Collect Lockup and the "COLLECT CREDITS" button is pressed																																
59	COLLECT LOCKUP	0400 0000- 9999	(Default) Number of credits for a machine lockup when the credit meter equals or exceeds this number and the "COLLECT CREDITS" button is pressed. Collect Drop Amount applies.																																
70	PAYLINE SEQUENCE	01234567 02163457 XXXXXXXX	In a line pay game, each coin buys a payline (Default) Sequence for a standard payline game (Default) Sequence for a two or four payline game Any other payline sequence can be optioned																																
			<table border="1"> <thead> <tr> <th></th> <th>Reel 1</th> <th>Reel 2</th> <th>Reel 3</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>3</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>top 1</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>center 0</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>bottom 2</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>4</td> <td>---</td> <td>---</td> <td>---</td> </tr> <tr> <td>6</td> <td>---</td> <td>---</td> <td>---</td> </tr> </tbody> </table>		Reel 1	Reel 2	Reel 3	5	---	---	---	3	---	---	---	top 1	---	---	---	center 0	---	---	---	bottom 2	---	---	---	4	---	---	---	6	---	---	---
	Reel 1	Reel 2	Reel 3																																
5	---	---	---																																
3	---	---	---																																
top 1	---	---	---																																
center 0	---	---	---																																
bottom 2	---	---	---																																
4	---	---	---																																
6	---	---	---																																

2. LOCATION AND SET UP

KEYPAD COMMAND/OPTION TABLE (cont'd)			
Command Number	Command	Option Number	Description
81	SET REAL TIME CLOCK	123456789012	Initialize the real time clock in the machine. The sequence of digits are: 1+2 = month 3+4 = day 5+6 = year 7+8 = hour 9+0 = minute 1+2 = second
			NOTE: When verifying this option, the time does not update on the Message Center.
82	PAYLIGHT SEQUENCE	0123456789	The sequence of when each payline lights (Default) Standard paylight sequence 0 = center payline light 1 = top payline light 2 = bottom payline light 3 = 4th payline light 4 = 5th payline light 5 = 6th payline light 6 = 7th payline light 7 = 8th payline light 8 = 9th payline light 9 = 10th payline light

Descriptions and Examples of Options

27 CREDIT TYPE - 02 Player Selectable Credit:

When the machine is in a Game Over state with no credits showing on the meter, press the "COLLECT CREDITS" button to select a non-credit or standard credit game.

"CREDIT...0" appears when the standard credit game is selected. The game becomes a non-credit game when (1) the machine has not credits on the meter and has not been played for 30 seconds or (2) the "COLLECT CREDITS" button is pressed to collect credits.

34 CREDIT GAME LOCKUP:

When the win amount added to the credit meter is equal to or greater than the credit top limit, the lockup and drop amounts apply leaving the credit meter unchanged.

Example #1 - The Credit Top Limit is set at 5000. The credit meter registers 4980. A 50 coin win occurs. The hopper pays 50 coins. The credit meter remains at 4980.

Example #2 - The Credit Top Limit is set at 5000. The credit meter registers 4980. The High Lockup Amount is set at 500 and the High Drop Amount is set at 200. A 500 coin win occurs. The hopper drops 200 coins and the machine locks up. The credit meter remains at 4980.

- 54 HIGH DROP AMOUNT
- 55 HIGH LOCKUP AMOUNT
- 56 LOW DROP AMOUNT
- 57 LOW LOCKUP AMOUNT:

Example #1 - The jackpot on the machine is 1000 coins. A drop of 200 is desired for the jackpot. For wins over 200 and less than the jackpot, a drop of 100 is desired.

Set the HIGH DROP AMOUNT at 200
Set the HIGH LOCKUP AMOUNT at 1000
Set the LOW DROP AMOUNT at 100
Set the LOW LOCKUP AMOUNT at 201

Example #2 - The jackpot on the machine is 1,000,000 coins. No drop is desired for the jackpot. For wins over 200 and less than the jackpot, a drop of 100 is desired.

Set the HIGH DROP AMOUNT at 0
Set the HIGH LOCKUP AMOUNT at 9999
Set the LOW DROP AMOUNT at 100
Set the LOW LOCKUP AMOUNT at 201

2. LOCATION AND SET UP

KEYPAD ERROR MESSAGE TABLE		
Message	Description	Procedure
INVALID COMMAND	The command number entered is not a valid command.	Press "KEYBD/CLR" to begin again.
INVALID LENGTH	The length (number of digits) of the option is either too long or too short.	Press "KEYBD/CLR" to begin again.
INVALID OPTION	The option number entered is not valid for that particular command.	Press "KEYBD/CLR" to begin again.
NON NUMERIC OPT	The option value entered is not a number.	Press "KEYBD/CLR" to begin again.
CAN'T SET OPTIONS WITH COINS IN GAME	The machine must be in the Game Over State.	Play a game to put machine in the Game Over State.
CAN'T SET OPTIONS WITH CREDITS ON GAME	The credit meter must show "0" credits to set an option	Clear the credit meter by pressing the "COLLECT CREDITS" button.
KEYPAD REVERSED		Reverse the keypad connector.

3. MACHINE OPERATIONS

Game Play

On the Message Center, the upper line messages alternate while the lower message remains constant.

GAME OVER LAST IN.3

INSERT COIN LAST IN.3

Insert a coin or token.

NOTE: Sounds vary with the initialized options and simple vs deluxe sound.

Additional coins may be inserted up to the limit accepted by the machine. Lamps light indicating valid coins in and paylines (horizontal or diagonal lines where the symbols on the reel align). The sequences for the paylines and lights vary with the initialized options. The "COIN IN" message flashes until the maximum coins are inserted.

PULL HANDLE COIN IN.2

NOTE: If 1 more coin than the maximum is accepted, it registers on the coin in counter. The extra coin is held until the current game is completed. After the completion of the current game, the extra coin is credited to the next game.

Initiate reel spin by pulling the handle or pressing the lighted "SPIN" button. A reel spin may be initiated any time after 1 coin is accepted. The autospin option causes the reels to spin automatically on maximum coins in with the door closed. When the handle reaches its limit of travel, the reels begin to spin.

COIN IN.2

After spinning for an appropriate period of time, the reels are stopped in the sequence, left to right. The number of revolutions of the reel varies with the initialized options.

When a winning combination appears on a valid payline, the hopper dispenses the coins. The melody varies with the initialized options. The Message Center displays the win and increments the payout as the hopper dispenses coins.

WIN....5 PAY....3 COIN IN.2

3. MACHINE OPERATIONS

Game Play (cont'd)

When the payout is completed, the Message Center displays "WIN....5 PAY....5" alternately with "INSERT COIN". The displayed schedule on the machine glass shows the number of coins won with a particular set of symbols on the payline(s) bought.

When the top jackpot is won, the upper portion of the tower light turns ON. The jackpot melody varies with the initialized options. The machine is initialized to either immediately lock up or make a partial payment (drop amount) before locking up.

For an immediate lockup, the following messages alternate.

WIN-JKPT PAY....0 COIN IN.3

WAIT FOR ATTENDANT LOCKUP

For a partial payment on a 1000 coin jackpot, the hopper pays 200 coins and the following messages alternate.

WIN-JKPT PAY..200 COIN IN.3

WAIT FOR ATTENDANT LOCKUP

The slot attendant hand pays the amount due the player and actuates the key switch on machine's side to clear the jackpot.

The machine is ready for game play. On the Message Center, the upper line messages alternate while the lower message remains constant.

INSERT COIN LAST IN.3

JACKPOT PAID LAST IN.3

To call for change or assistance, press the "PRESS FOR SERVICE" button. If the game is operational, it may be played while waiting. The upper portion of the tower light and service button flash until the button is pressed again. The sounds vary with the initialized options.

Credit Play

NOTE: To select the type of credit play and credit game lockup, see Section 2, LOCATION AND SET UP under KEYPAD COMMAND/OPTION TABLE.

The "PLAY ONE CREDIT" and "PLAY MAX CREDITS" buttons flash when credits are available. The "COLLECT CREDITS" button is ON.

On the Message Center, the upper line messages alternate while the lower message remains constant.

PLAY COIN OR CREDIT CREDIT...5 LAST IN.3

WIN....0 PAY....0 CREDIT...5 LAST IN.3

When a coin or credit is wagered, the "COLLECT CREDITS" button turns OFF. The credit is deducted from the credit meter ("CREDIT") and added to the coin in count ("COIN IN") for that game.

The player can wager a coin/token only when:

either the credit meter has no credits.

or the acceptance of coins with credits available is set in the Initialization.

When the maximum number of coins or credits are wagered, both the "Play Credits" buttons turn OFF, the "COIN IN" message stops flashing, and "PULL HANDLE" appears on the Message Center.

A reel spin may be initiated any time after 1 coin or credit is accepted.

The initialized options determine how wins are paid or credited.

When the win amount added to the credit meter is equal to or greater than the credit top limit, the lockup and drop amounts apply leaving the credit meter unchanged.

Example #1 - The Credit Top Limit is set at 5000. The credit meter registers 4980. A 50 coin win occurs. The hopper pays 50 coins. The credit meter remains at 4980.

Example #2 - The Credit Top Limit is set at 5000. The credit meter registers 4980. The High Lockup Amount is set at 500 and the High Drop Amount is set at 200. A 500 coin win occurs. The hopper drops 200 coins and the machine locks up. The credit meter remains at 4980.

3. MACHINE OPERATIONS

Credit Play (cont'd)

To collect the credit meter winnings, press the "COLLECT CREDITS" button when the machine is in a Game Over state. The credits collected meter ("COL") increments for each coin the hopper pays. On the Message Center, the upper line messages alternate while the lower message remains constant.

COL....20	PAY...20
CREDIT...0	LAST IN.3

INSERT COIN
CREDIT...0 LAST IN.3

If the credit meter is equal to or exceeds the Collect Lockup, the machine is initialized to (1) lock up immediately or (2) make a partial payment (Collect Drop Amt) before locking up for an attendant pay. The upper portion of the tower light turns ON and the following messages alternate.

COL..100	PAY...20
CREDITS 520	LAST IN.3

WAIT FOR ATTENDANT
LOCKUP

The slot attendant hand pays the amount due the player and actuates the key switch to clear the credit meter.

Bookkeeping Meters

Bookkeeping Meters account for all valid wagers and wins on a machine. These meters increment from 1 to 999,999 then rollover to begin at zero. They cannot be reset through a machine function. Coins are locked out when reading the bookkeeping meters. With the machine in the Game Over state, actuate the key switch on the machine's side to view these meters.

NOTE: When the machine door is open, wagers and wins are not counted on any meters.

BOOKKEEPING METERS TABLE	
Message	Description
COIN IN METER 000050	Records each coin/token inserted into the machine for the purpose of a valid wager
TOTAL IN METER 001020	Records total valid wagers, both coins/tokens and credits
COIN OUT METER 000050	Records each coin/token dispensed from the hopper
TOTAL OUT METER 003500	Records the total number of coins/tokens dispensed by the hopper and credits wagered
TOTAL GAMES 000100	Records the total number of game cycles executed by the machine with the door closed. It is incremented at the start of the reel spin.
DROP METER 000000	Records the each coin/token from a valid wager that fall to the cash bucket below the machine
ATTENDANT PAYS METER 000001	Records the total number of times an attendant has made a payout. It is incremented after the payout when the attendant resets the machine.
HAND PAID METER 000150	Records the total number of hand paid wins including those paid on a credit meter reset. The top jackpot amount (Super Jackpot) is included when command 07 (# OF HANDPAY LOCKUPS) is set at option 00.

3. MACHINE OPERATIONS

BOOKKEEPING METERS TABLE (cont'd)	
Message	Description
SUPER JACKPOT 000000	Records the number of highest attainable Jackpot (Super Jackpot) lockup wins when command 07 (# OF HANDPAY LOCKUPS) is set at option 01, 02, or 03.
DOOR OPENS 000020	Records the number of times the front door of the machine is opened. It increments once each time the door status changes from closed to open.
GAMES SINCE DOOR OPEN 000002	Records the number of games played with the door closed. It resets to "0" with every door closing.
GAMES SINCE RESET 000012	Records the number of games played since a reset (power up or press "RESET" button)
CREDIT METER 000650	Records the number of credits the player has on the credit meter. NOTE: This meter verifies the number of credits on the displayed credit meter.
(XXXXX) VERIFY	(XXXXX) represents any bookkeeping meter. See Section 4, <u>TROUBLESHOOTING</u> under <u>Corrupted Bookkeeping Meter Data</u> .

Win Record Meters

Press the "PRESS FOR SERVICE" button during or immediately after viewing the bookkeeping meters. The following messages appear.

REVIEW MODELS
INFORMATION FORMS

FOR DESCRIPTION OF
WIN RECORD METERS

The records are numbered from "0" indicating the largest win to a number indicating the smallest win. The total number of times each winning combination occurred during a valid game are recorded. The following message is an example.

SYM: D D D
RECORD: 00 000000

Last and Previous Game Meter

Press the "PRESS FOR SERVICE" button 2 times during or immediately after viewing the bookkeeping meters. "LAST GAME" appears followed by its information. See the GAME METER TABLE.

Press the "PRESS FOR SERVICE" button 3 times during or immediately after viewing the bookkeeping meters. "PREVIOUS GAME" appears followed by its information. See the GAME METER TABLE.

GAME METER TABLE	
Message	Description
FIRST COIN 01/02/87 00:00:00	Date and time of first coin played
FIRST REEL 01/02/87 00:00:00	Date and time of first reel spin
COINS IN 0000	Player's wager
REELS 01 22 06 00 00	Reel position software memory map index number from left to right
CENTER POSITION C B A	Center payline symbols from left to right
AMT WON 00000	Total number of coins and/or credits won
AMT PAID 00000	Total number of coins and/or credits paid
CREDIT 0000	Credit meter amount after payout or at end of a game
DOOR	Date and time door was opened
BLACKOUT	Date and time power up occurred

NOTE: If there is any question about the jackpot being legal, record the "LAST GAME" and "PREVIOUS GAME" information after clearing the lockup.

3. MACHINE OPERATIONS

Electro-Mechanical Meters

These meters duplicate the corresponding electronic meters. These meters are displayed at the top left edge of the display glass on the lower front door. In order to read the meters, position oneself to look up under the top left edge of the display glass bracket. Reading the meters from left to right with the door closed, they are as follows.

TOTAL IN	TOTAL OUT	CASHBOX (DROP METER)	ATTENDANT PAID (HAND PAID) (LOCK UP)	GAMES PLAYED (TOTAL GAMES) (HANDLE PULLS)
----------	-----------	-------------------------	--	---

The meters are labeled on the meter assembly inside the lower door.

Power Up Malfunctions

A power up malfunction may be any of the following.

1. If the 2 LEDs on the MPU board remain ON, the game is in a reset. Call a senior service technician.
2. No message and no lights. Check the power and fuses.
3. No message appears on the Message Center and the payline lights flash. Open the door.

-CAUTION-
DISCHARGE BODY STATIC TO AVOID ANY
INTERNAL DAMAGE TO THE COMPONENTS.

- Check the connector to the Message Center PCB. If the problem remains, call a senior service technician.
4. "RESET" appears and remains on the Message Center. Call a senior service technician.
 5. If the following messages appear, call a senior service technician.

INCOMPATIBLE EPROMS
PRSN. VERSION 000X

INCOMPATIBLE EPROMS
PROG. VERSION 000X

6. "BAD RAM CHIP" or "BAD SAFE RAM CHIP" appears on the Message Center. Check that the Safe RAM (U31 & U100) and the RAM (U13/14 & U15/16) chips on the microprocessing unit (MPU) board are seated properly. If the message remains, call the senior service technician.
7. "COIN IN JAM" tilt appears. Place a sample coin or token in the comparator and adjust the electronic acceptor.
8. The following message appears on the Message Center for about 2 seconds and then disappears showing the need to initialize the real time clock. This message may also appear after a game reset.

CHK REAL TIME CLOCK

Initialize the real time clock.

4. TROUBLESHOOTING

DOOR HINGE OPEN Message

The "DOOR HINGE OPEN" message appears when the door switch is detected open before the door lock is open. The game is interrupted. Call a senior service technician.

Corrupted Bookkeeping Meter Data

A message appears on the Message Center during meter readings when that particular meter's data is corrupted.

```
XXXXX METER
      . VERIFY
```

Actuate the key switch. A message appears with the correct value.

```
XXXXX METER
      000437
```

If anything other than numbers appear, call the senior service technician.

Message Center Symbols

The symbols indicate certain malfunctions and conditions to conserve characters and memory.

<u>Symbol</u>	<u>Description</u>
*	Door was opened
!	Reset occurred
@	Blackout (power removed or failed)
%	Door was opened and a reset occurred
&	Door was opened and a blackout occurred

The symbols appear in the top left corner of the Message Center.

The symbols disappear with the handle pull of the second valid game.

NOTE: An "@" symbol overwrites the "!" if the reset occurred as a result of a power failure.

Blackout

With an electric power interruption, "BLACKOUT" appears briefly on the Message Center. When power returns, the machine resumes its previous state of operations. The "at" (@) symbol, displayed in the upper left of the Message Center, indicates a reset occurred when the power failed. The blackout information becomes part of the Previous Game recall information stored in Safe RAM.

-CAUTION-
IF THE MACHINE IS WITHOUT POWER FOR AN
EXTENDED PERIOD OF TIME, VERIFY ALL
INITIALIZED OPTIONS UPON POWER UP.

If power falls during a reel spin, the player gets to re-pull the handle. When power is restored, the following messages alternate on the Message Center.

@ MALFUNCTION
CREDIT...5 LAST IN.3

@ PULL HANDLE
CREDIT...5 LAST IN.3

If power falls during a payout, the machine tilts. Upon power up, "@ RESET DURING PAYOUT" appears with the amount won and the amount paid. Open the door and press the "RESET" button. "@CLOSE DOOR TO COMPLETE PAYOUT" appears on the Message Center. Upon closing the door, the payout is completed.

If the door was opened during power down, the following messages alternate on the Message Center.

DOOR OPEN
DURING POWER DOWN

TURN KEYSWITCH
TO CONTINUE

Turn the keyswitch on the right side of the machine. A reset occurs and the machine enters the Game Over State.

4. TROUBLESHOOTING

Tilts

When a malfunction occurs, play is interrupted and the machine tilts. The following conditions are present.

1. The paylines and lower portion of the tower light flash.
2. Coins are locked out.
3. "PRESS FOR SERVICE" button is disabled.
4. The tilt sound varies with the initialized options.
5. The following messages alternately appear on the Message Center.

WAIT FOR ATTENDANT COIN IN JAM

WIN.....0 PAY....0 CREDIT..24 COIN IN.1
--

The slot attendant or service technician opens the door. After correcting the malfunction, the attendant or technician presses the "RESET" button on the MPU board.

A diagnostic test may be entered by pressing the "TEST" button. Exiting from the test returns the game to the tilt condition.

The lower portion of the tower light is now continuously ON indicating an open door. "RESET" flashes on the Message Center and disappears.

With the door closing, the machine returns to the Game state prior to the tilt. An "%" appears in the upper left corner of the Message Center until the handle pull of the second valid game.

NOTE: The reel movement tilt is the only tilt that can occur while the game is in a tilt. The reel movement tilt must be cleared before the original tilt can be cleared.

4. TROUBLESHOOTING

MALFUNCTION TILT TABLE	
TILT MESSAGE	MALFUNCTION CONDITION
COIN IN JAM	No sample coin in comparator on power up Coin stuck in comparator or took too long to pass through--loosen the rail adjustment
COIN REVERSE	Stringing of a coin Coin bounced up--tighten the rail adjustment
COIN ERROR	Coins detected as accepted during a game state in which coins should be locked out
COIN OUT JAM	Coin(s) jammed under hopper rocker and roller assembly
HOPPER EMPTY	No coins sensed by coin out switch for 12 seconds
OVER PAY	Hopper paid out 1 or more coins than winning amount--Message Center will alternate "WIN 25 PAID 25" and "OVER PAY"
RESET DURING PAYOUT	Unintentional reset (static) or blackout occurred during payout
IMPROPER REEL SPIN	Reel disturbance or improper spin detected by sensors--Reels go into a slow spin state
REEL 1 MOVEMENT	Reel 1 moved after indexing
REEL 2 MOVEMENT	Reel 2 moved after indexing
REEL 3 MOVEMENT	Reel 3 moved after indexing
REEL 4 MOVEMENT	Reel 4 moved after indexing
REEL 5 MOVEMENT	Reel 5 moved after indexing
DOOR OPEN SPIN	Door opened during reel spin
CHECK BATTERY	Battery voltage below acceptable level--Message displayed only during Game Over state
CHECK HOPPER	Coin(s) jammed under hopper rocker and roller assembly anytime except during payout
No Message	Message Center display malfunction

0

0

0

5. MAINTENANCE AND REPAIR

The most important part of a regular maintenance program is the machine's diagnostic test functions. Run all diagnostic tests after maintenance and/or replacement of parts or assemblies. See Section 2, LOCATION AND SETUP, under Diagnostic Tests for detailed instructions.

General Cleaning

The outside of the machine cabinet and exterior metal trim can be cleaned with any non-abrasive household cleaner. Both sides of all other glass or plastic on or in the machine MUST be cleaned with an anti-static type cleaner ONLY!

Replace Fuses

The machine contains a total of 7 fuses. To replace a fuse follow these steps.

1. Open the lower machine door.
2. Flip the power switch OFF.
3. Next to the power switch are two 5 AMP fuses and one 8 AMP fuse in standard threaded holders. Unscrew the holders and replace any blown fuse(s). (Fig. 5-1)

-WARNING-

NEVER USE FUSES WITH AN AMPERAGE RATING HIGHER THAN STATED IN THE POWER SUPPLY ASSEMBLY DRAWING.

4. Remove the hopper. See Replace Hopper Mechanism in this Section.
5. Remove the screw and the door on the power supply cover. (Fig. 5-1)
6. The 4 fuses on the power supply PCB are mounted in clip-type holders on the upper right corner.

+ 5 DC	10 AMP
+24 DC	10 AMP
-12 DC	5 AMP
+12 DC	5 AMP
7. Replace the blown fuse(s) using a fuse puller tool.
8. Apply power.
9. Test operate the machine. If the fuse blows again, call a senior service technician.

NOTES

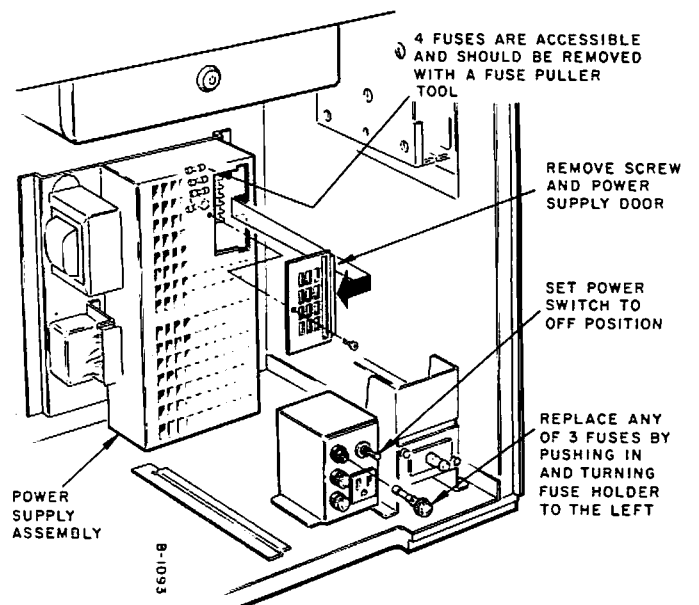
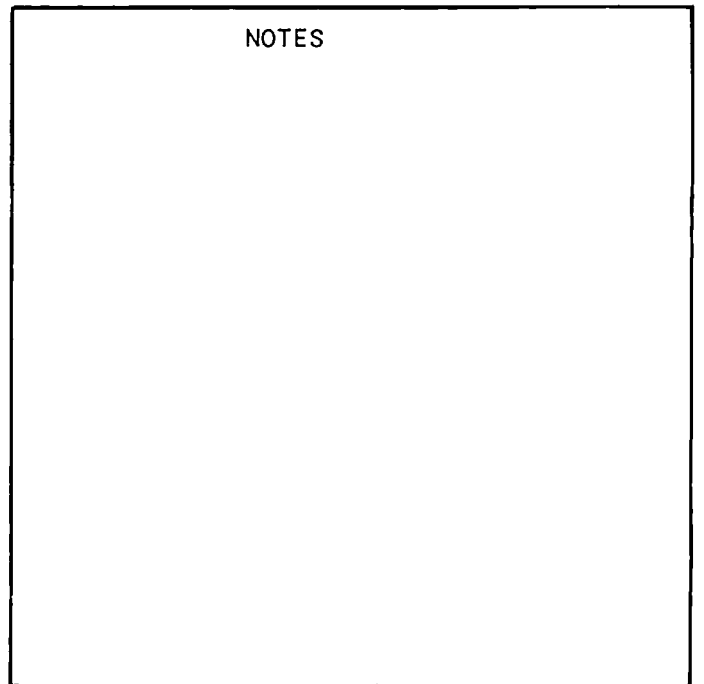


Fig. 5-1

5. MAINTENANCE AND REPAIR

Replace Reel Mechanism Assembly

To remove the reel mechanism assembly, see *figure 5-2* and follow these steps.

1. Open lower and upper machine doors.
2. Flip power switch OFF.
3. Loosen the 2 screws on the feature light reflector assembly and pivot it forward and down.
4. Unplug and remove the light reflector assembly.
5. Loosen 2 screws on the tie channel.
6. Lift and remove the tie channel.
7. Disconnect the reel motor and the reel optic board connectors from reel control board.
8. Remove the 2 screws that are located to the far right front and far left front of the reel mechanism mounting base.
9. Grasp the reel mechanism with the reel hub and the reel and motor bracket. Tilt the front of reel mechanism assembly up and slide forward from the side screws. Lift the reel mechanism assembly out.

NOTE: Carry the reel mechanism by the bracket and the mounting base to prevent damage to the reels.

NOTES

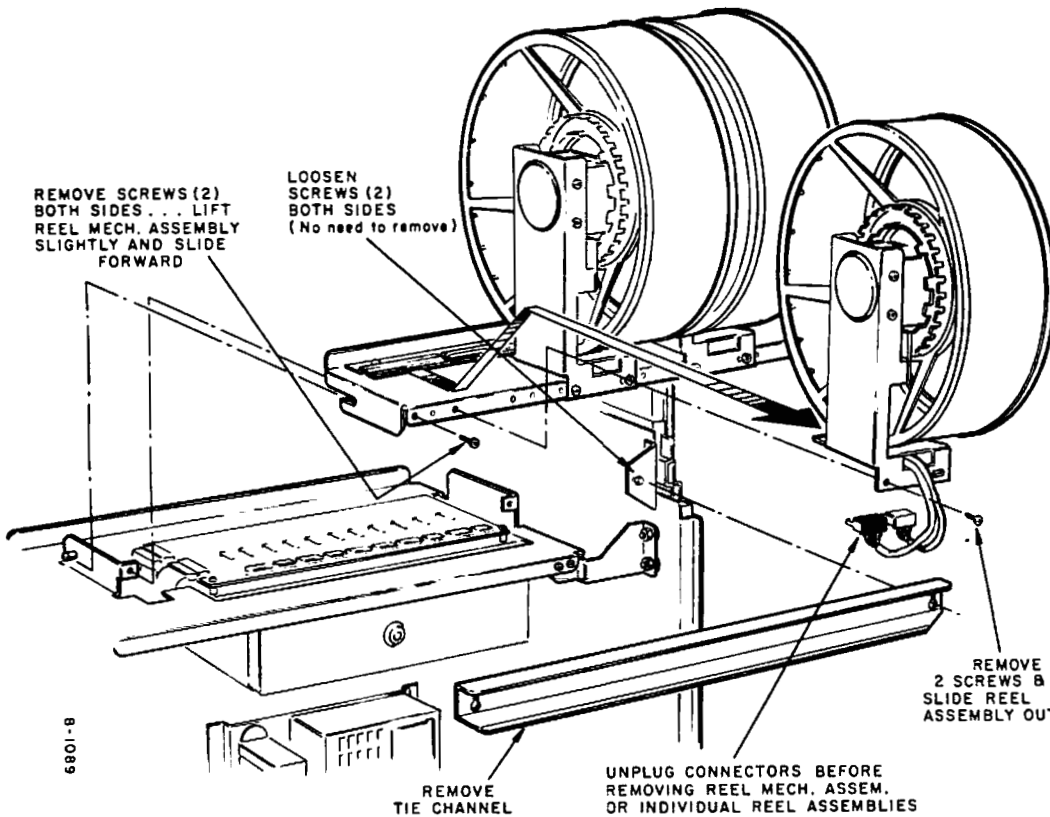


Fig. 5-2

Replace a Reel and Motor Assembly

To remove a reel and motor assembly, see *figure 5-2* and follow these steps.

1. Follow steps 1 through 6 of Replace Reel Mechanism Assembly.
2. Disconnect the reel motor and the reel optic board from the reel control board.
3. Remove the 2 screws from the front of the specific reel and motor bracket.
4. Grasp the reel and motor bracket and slide the assembly forward from the mounting flange and lift out.

<p>NOTES</p>

5. MAINTENANCE AND REPAIR

Replace Printed Circuit Boards

When replacing any PCB:

- open the machine doors
- flip the power switch OFF
- remove the PCB and place it in a holder for safe transportation to the lab.

-CAUTION-
DISCHARGE BODY STATIC BEFORE
HANDLING THE PCB AND IC CHIPS TO
AVOID DAMAGE TO ELECTRONIC
COMPONENTS.

To remove the I/O board, MPU board, or sound PCB, follow these steps.

1. Unlock the card rack door and remove it. (Fig. 5-3)
2. Flip out the card ejectors found on the sides of a PCB.
3. Slide the board forward.

top	I/O board
middle	sound board
lower	MPU board

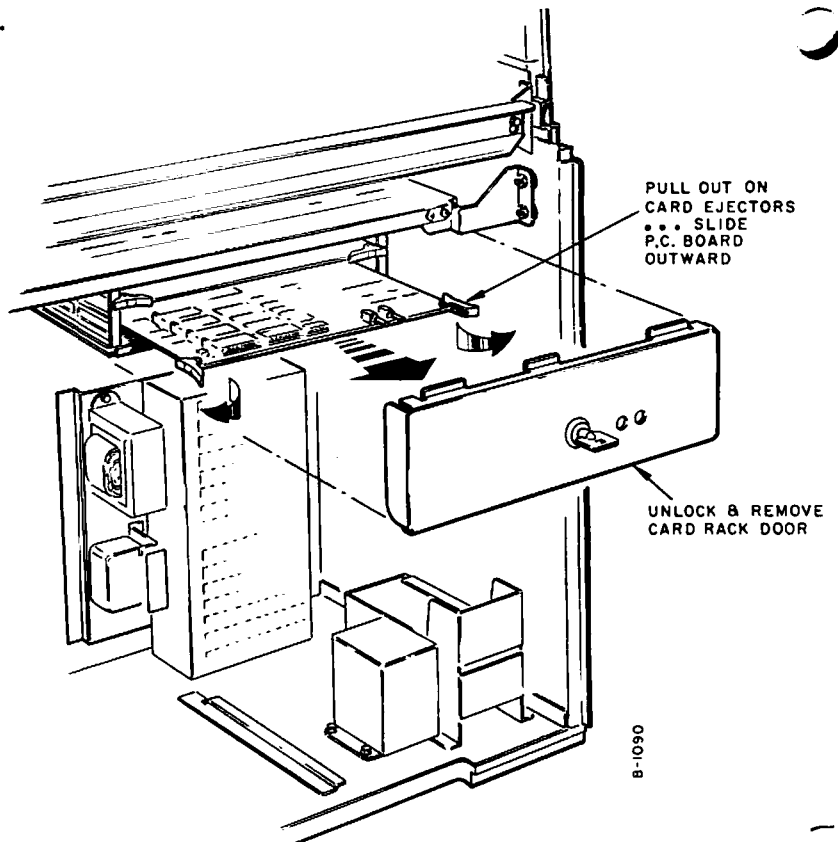


Fig. 5-3

Replace Printed Circuit Boards (cont'd)

To remove the hopper control PCB, follow these steps.

1. Remove the hopper. See Replace Hopper Mechanism in this Section.
2. Remove the 2 screws from the hopper control board. (Fig. 5-4)
3. Firmly grasp the hopper control PCB and pull forward which disconnects it from the backplane at J26 and J27.

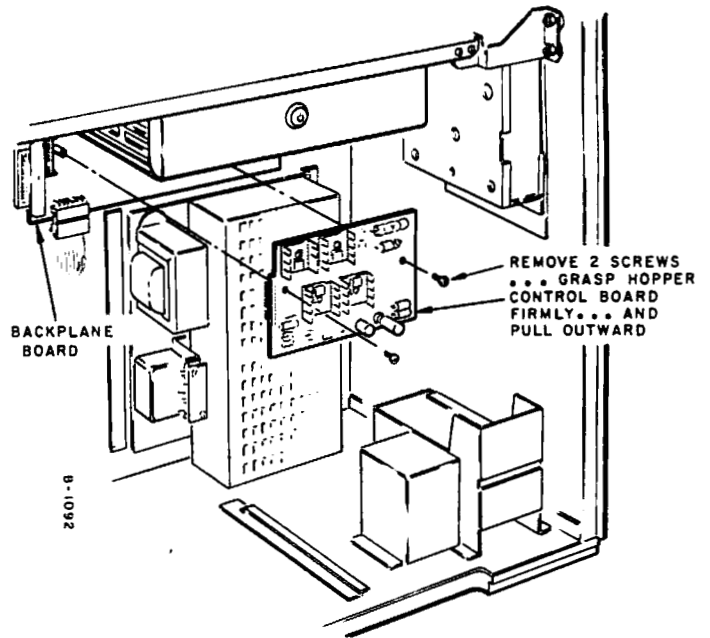


Fig. 5-4

To remove the reel control PCB, follow these steps.

1. Remove the reel mechanism. See Replace Reel Mechanism Assembly in this Section.
2. Disconnect the 8-pin power connector and the 34-pin data connector from the left side of the reel control PCB.
3. Take out the 5 screws and lift out the reel control board.

To remove the Message Center PCB, see Replace Message Center Assembly in this Section.

To remove the handle sensor PCB, follow these steps.

1. With an open end wrench, remove the 2 screws on the handle sensor board.
2. Carefully remove and unplug the PCB from between the handle mechanism cover and the shelf.

NOTES

5. MAINTENANCE AND REPAIR

Replace Light Bulbs

To change the display glass fluorescent bulb, follow these steps.

1. Open the lower door.
2. Flip the power switch OFF.
3. Lift up on the side latches of the coin comparator and pivot the top out and down.
4. Loosen 2 screws. One is found through the right hole in the coin comparator housing and one is found above the electro-mechanical meters. Both are securing the display glass bracket. (Fig. 5-5)
5. Push up on the bottom of the display glass and pull out the glass.
6. Replace the fluorescent bulb.
7. When re-installing the display glass, see the call out in figure 5-5.

NOTES

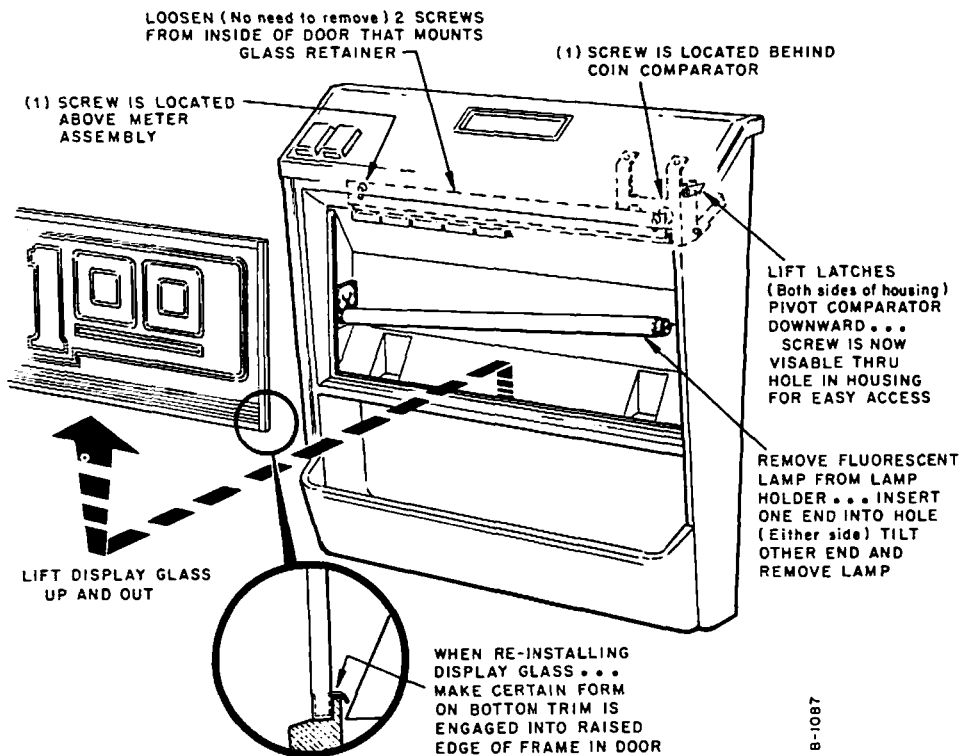


Fig. 5-5

Replace Light Bulbs (cont'd)

To change the reel glass fluorescent bulbs, follow these steps.

1. Open the lower and upper doors.
2. Flip the power switch OFF.
3. Remove the screw and the cable clamp before unplugging the reel glass light assembly. (Fig. 5-6)
4. Remove the 2 screws from the top flange of the reel glass display assembly.
5. Tilt the top of the assembly out and remove for easy access to the fluorescent bulbs.

NOTES

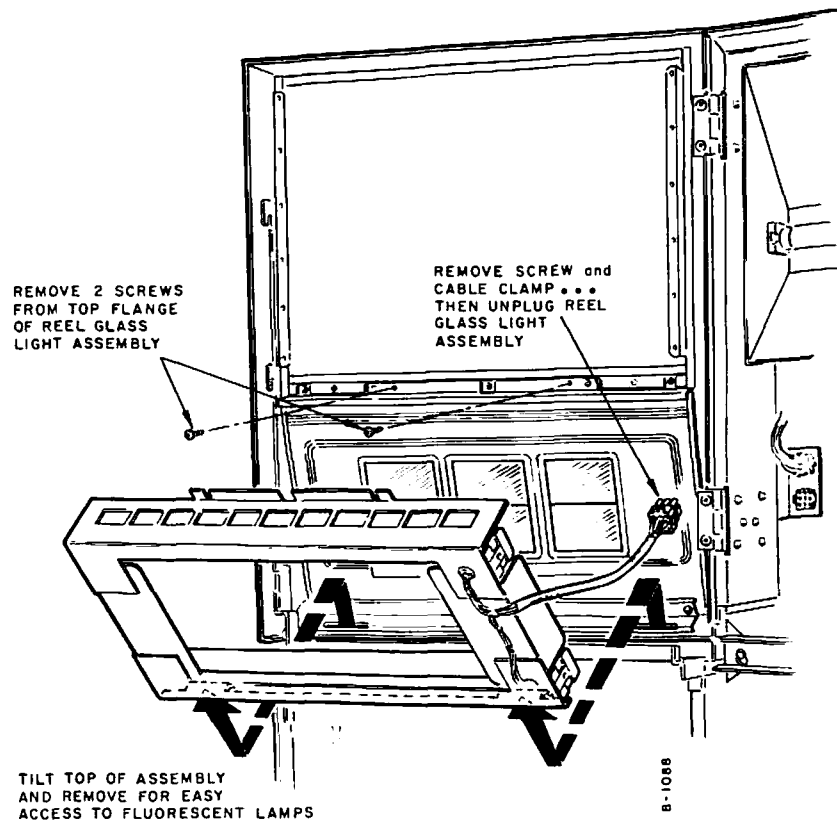


Fig. 5-6

5. MAINTENANCE AND REPAIR

Replace Light Bulbs (cont'd)

To change the deck button lights, follow these steps.

1. Open the lower door.
2. Flip the power switch OFF.
3. Using long nose pliers, twist the light bulb socket 90 degrees and pull from the pushbutton assembly.
4. Pull the bulb out of the socket and replace the bulb.

Replace a Deck Button Switch

To remove a deck button switch, follow these steps.

1. Open the lower door.
2. Flip the power switch OFF.
3. Pull the switch from the pushbutton assembly.
4. Pull the switch from the wire connectors and replace the switch.

Replace Message Center Assembly

To remove the Message Center PCB and vacuum fluorescent display, follow these steps.

1. Open the lower machine door.
2. Flip the power switch OFF.
3. Disconnect the PCB at J1
4. Squeeze the circuit board supports and pull the assembly down.

NOTES

Replace Ballast and Starter Assembly

To remove the ballast and starter assembly, follow these steps.

1. Open the lower and upper machine doors.
2. Flip the power switch OFF.
3. Loosen the 2 screws above the fluorescent bulb in the light reflector assembly.
4. Tilt the top of the assembly out.
5. Take out the 4 screws to remove the ballast and starter assembly.

Replace Power Supply Assembly

To remove the entire power supply assembly including the line filter and transformer, follow these steps.

1. Open the lower machine door.
2. Flip the power switch OFF.
3. Loosen the 4 screws on the power supply assembly mounting plate.
4. Slide the assembly to the left, and pull out.

Replace Hopper Mechanism

To remove the hopper unit, follow these steps.

1. Open the front door
2. Disconnect the hopper cable from the backplane at J10.
3. Grasp the handle on the hopper unit and pull forward.

NOTES

5. MAINTENANCE AND REPAIR

Adjust Hopper Wiper

The wiper knocks off coins stuck together which allows only 1 coin to pass. To adjust the wiper, see *figure 5-7* and follow these steps.

1. Turn the pin wheel to position a coin under the wiper.
2. Loosen both mounting screws and move the wiper edge up to the coin.
3. Tighten both screws just enough to allow the wiper to be moved in and out.
4. Slide a coin under the wiper edge and release it. The coin should fall down onto the shelf wheel. The wiper edge should be close to the coin, but not holding it.
5. Tighten the back screw, then the front screw, constantly checking the wiper position to the coin. Continue to tighten the back screw then the front until the wiper cannot be moved in or out. DO NOT over-tighten the screws as the head of the screw will break off.

Hopper Knife Position

The forward edge of the hopper knife presses against the pin wheel and touches the edge of the shelf wheel. (*Fig. 5-7*) This allows no coin to wedge itself between the blade and the pin wheel when coins are being dispensed.

NOTE: Do not apply any grease or oil to any area that comes in contact with the coins.

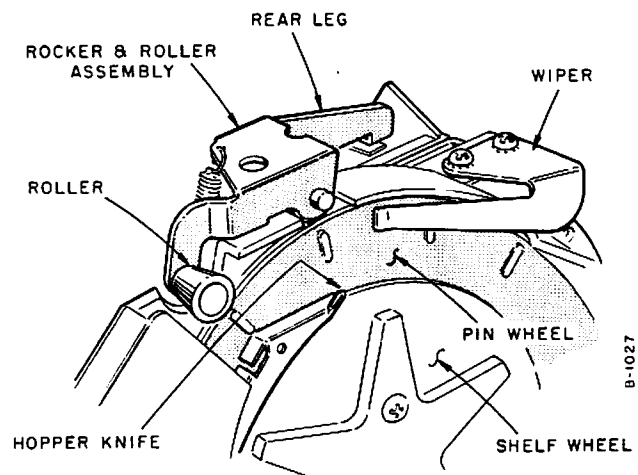
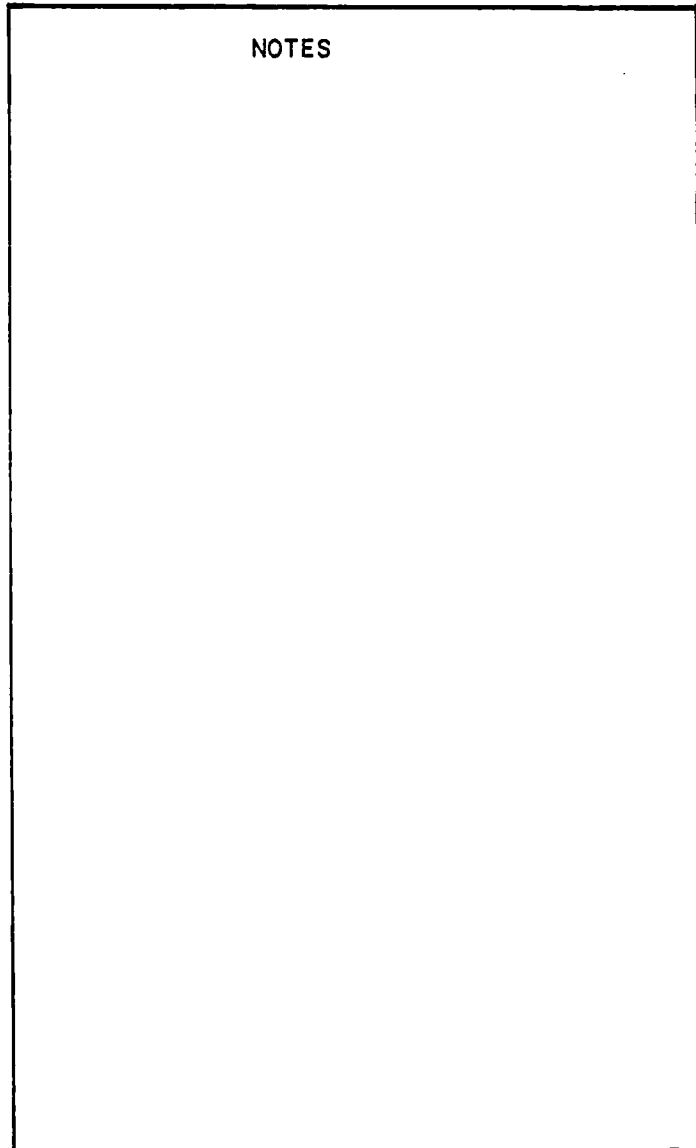


Fig. 5-7

Adjust Hopper Microswitch

This switch is used to detect each coin as it is paid out of the hopper. The switch is of the low current capability, gold-crosspoint type.

The mechanism which trips the microswitch is designed to provide a variable time-delay between coin detection and actuation of the microswitch. Check for positive microswitch actuation with a coin directly beneath the roller. Verify that the microswitch is open with no coin beneath the roller.

To adjust the mechanism, see *figure 5-8* and follow these steps.

1. Loosen the nut on the rocker and roller assembly.
2. Screw the adjustment screw down to within 1/32" of the switch actuator blade.
3. Tighten the nut.

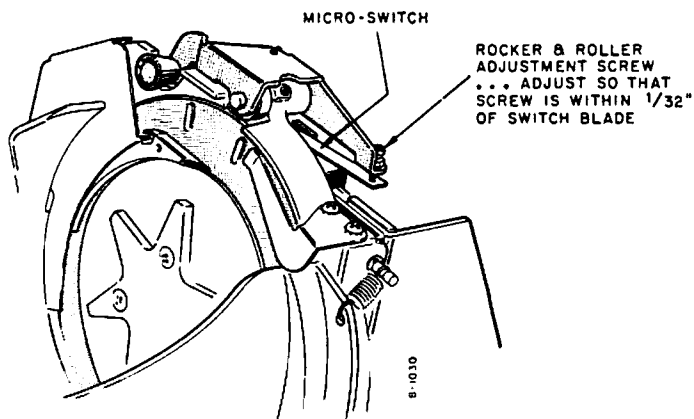


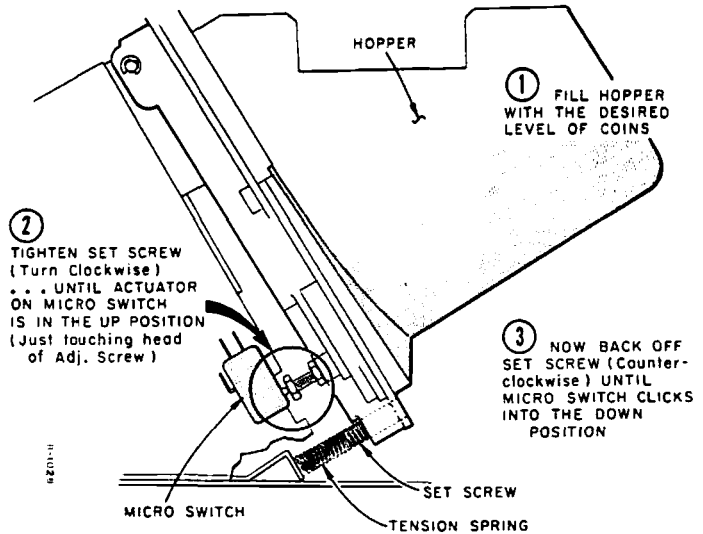
Fig. 5-8

NOTES

5. MAINTENANCE AND REPAIR

Adjust Hopper Counterbalance

1. Fill the hopper with the desired level of coins.
2. Turn the set screw clockwise until the actuator of the micro-switch is in the up position. (Fig. 5-9)
3. Turn the set screw counter-clockwise very gradually until the micro-switch clicks down. The hopper is set at the given desired capacity.



Replace Handle

To remove and replace the handle, follow these steps.

- WARNING -

DO NOT USE REPAIRED OR REWORKED HANDLES TO REPLACE DAMAGED OR WEAKENED HANDLES. SUCH HANDLES MAY NOT BE ADEQUATE TO PREVENT PLAYER INJURY. ONLY HANDLES MANUFACTURED BY BALLY MANUFACTURING CORPORATION ARE APPROVED FOR USE ON BALLY EQUIPMENT.

1. Pop out the cover in the center of the hub to expose the set screw.
2. Using an Allen wrench, remove the set screw.
3. Unscrew and remove the handle. The hub falls free.
4. Screw in the new handle holding the hub in place. The flats on the handle must be parallel to the side of the cabinet.
5. Using the Allen wrench, tighten the set screw against the lower flat on the handle.
6. Replace the screw cover.

Fig. 5-9

NOTES

Handle Mechanism Operation

Software signals the solenoid to activate. This causes the release pawl to drop down and hold the lock pawl away from the rack lock lever.

Pulling the handle, causes the rack lock lever to pivot, contacting the full stroke pawl. The optical reflective switches on the handle sensor PCB relay the handle position to the game program. The ratchet effect, caused by the full stroke pawl falling against the rack lock lever, requires a completed handle pull to release.

When completing the handle pull, the rack lock lever stops at the rear bumpers. The extension spring pulls the full stroke pawl reversing its direction. The compression spring causes the rack lock lever and handle to return to the starting position. The lock pawl falls into the rear notch of the rack lock lever, preventing a handle pull until the solenoid is activated again. The full stroke pawl springs back to its starting position.

- WARNING -

DO NOT ALLOW THIS MACHINE TO BE OPERATED BY PLAYERS IF THE HANDLE IS LOOSE, BENT, CRACKED, OR OTHERWISE DAMAGED OR WEAKENED. INJURY TO PLAYERS MAY OCCUR IF OPERATOR(S) ALLOW A MACHINE WITH A DAMAGED OR WEAKENED HANDLE TO REMAIN IN SERVICE.

NOTES

LUBRICATION GUIDE

- (L)** INDICATES . . . USE HEAVY DUTY HYDROTEX LUBE #651
- (O)** . . . USE MELVIS 1A OIL

BOTH ENDS OF SHAFT OF LOCK PAWL ASSEMBLY THAT COME THRU BUSHINGS IN BOTH SIDE PLATES

(L) POINT WHERE LOCK PAWL ENGAGES HANDLE RELEASE ASSEMBLY

(O) LIGHT COAT OVER ENTIRE LOCK PAWL ASSEMBLY

(L) POINT WHERE LOCK PAWL ENGAGES RACK LOCK LEVER

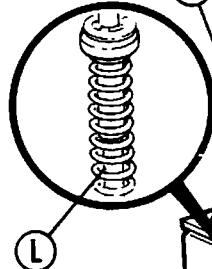
SPRING ANCHOR AND PIVOT SHAFT

(L) BOTH ENDS OF SHAFT OF FULL STROKE PAWL ASSEM. THAT COMES THRU BUSHINGS IN BOTH SIDE PLATES

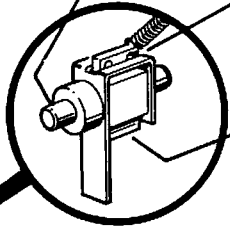
SLEEVE SHAFT

(L) IN HOLE

(L) POINT WHERE FULL STROKE ASSEMBLY ENGAGES RACK LOCK LEVER



(L) LUBRICANT APPLIED TO GUIDE SPRING SHAFT WHEN HANDLE IS IN NON-PLAY POSITION . . . (COMPLETELY UP)



HANDLE IN PLAY POSITION (COMPLETELY DOWN) SO THAT

(L) LUBRICANT CAN BE APPLIED TO TEETH OF RACK LOCK LEVER . . . ALSO BOTH SIDES OF RACK LOCK LEVER

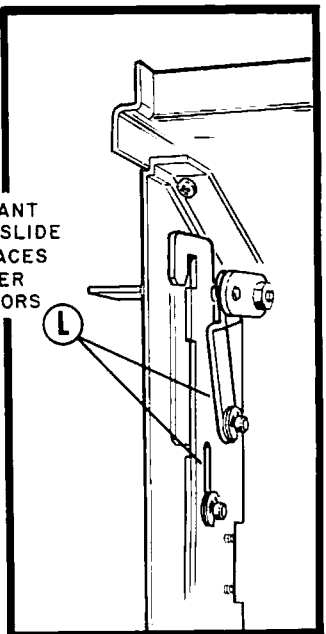
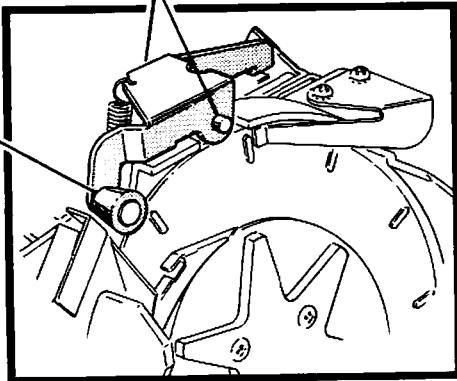
(O) OIL . . . BETWEEN BEARING AND NYLINER

APPLY LUBRICANT TO DOOR LOCK SLIDE SLIDING SURFACES . . . BOTH UPPER and LOWER DOORS

(L) BOTH ENDS OF PIN OF ROCKER AND ROLLER ASSEMBLY

(O) OIL . . . SHOULDER PIN OF ROCKER & ROLLER ASSEMBLY

NOTE
DO NOT ALLOW LUBRICANT OR OIL TO REACH PARTS OF THE MECHANISM WHICH CONTACT COINS



Double Progressive Operation

The BALLY Universal Double Progressive Display (UDPD) System consists of two basic components, the Prudent Progressive Control Board and the 16 Digit Progressive Display Board. The control board computes both "upper" and "lower" progressive jackpot amounts based on the initialized values. Initializing various parameters for the UDPD operation requires the BALLY keypad. The display board shows the "upper" and "lower" progressive jackpot amounts simultaneously. When a specified winning combination occurs with the required number of coins wagered for that game, the player wins the "upper" or "lower" progressive jackpot indicated by the glowing lamp. See 6A. DOUBLE PROGRESSIVE in this Section.

Slot Management System Operation

The BALLY Slot Management System (SMS) consists of the BALLY SMS-HHU Program used with the NEC Hand Held Unit and the SMS-PC Program used with an IBM PC or compatible computer. The SMS automates the process of retrieving data from the BALLY System 5000 Slot Machines and transferring this data to a personal computer where the data can be analyzed and stored. See 6B. SLOT MANAGEMENT SYSTEM in this Section.

Link Progressive Operation

Up to 3 Link Progressive systems can be connected through the standard parallel interface. See BALLY MFG. CORP. publication FO-650-17 for interface specifications.

If selected, the 3 progressives are incremented on each coin accepted and locked up on each of the top 3 pays on maximum coin in for a particular pay table. When a progressive jackpot is won, the machine locks up immediately. The attendant hand pays the amount due the player and actuates the key switch to clear the jackpot.

SDS/MISER Operation

The machine is compatible with the Slot Data System (SDS) Micro Intergrated Slot Event Recorder (MISER) manufactured by Bally Systems, Reno, Nevada. The MISER is installed in the factory or ordered as a retrofit kit.



UNIVERSAL DOUBLE PROGRESSIVE DISPLAY (UDPD)TABLE OF CONTENTS

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6A. DOUBLE PROGRESSIVE

The BALLY Universal Double Progressive Display (UDPD) System consists of two basic components, the Prudent Progressive Control Board and the 16 Digit Progressive Display Board. The control board computes both "upper" and "lower" progressive jackpot amounts based on the initialized values. Initializing various parameters for the UDPD operation requires the BALLY keypad. The display board shows the "upper" and "lower" progressive jackpot amounts simultaneously. When a specified winning combination occurs with the required number of coins wagered for that game, the player wins the "upper" or "lower" progressive jackpot indicated by the glowing lamp.

Power Up

Power up the machine. One of the following malfunction codes may appear in the upper display. All 4 lamps flash. (Fig. 6A-1)

1. If a "01" or "02" code appears, see POWER UP MALFUNCTION TILT TABLE.
2. If a "04" appears, all parameters and options must be set, because Safe RAM was cleared.

The UDPD system consists of States which designate a particular mode of operation.

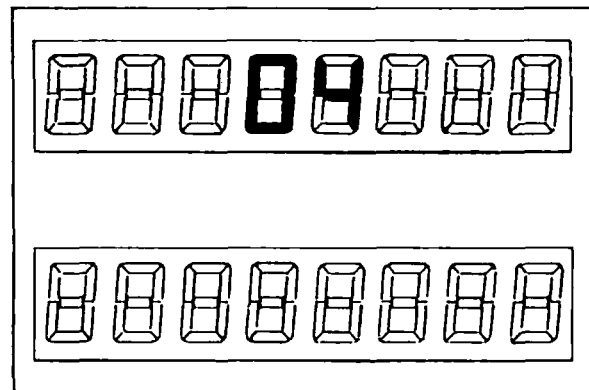


Fig. 6A-1

In order to set the parameters and options, (1) go to the Keypad Mode (State "20") (2) then to the Set Option Mode (State "0") and (3) follow the Initialization instructions.

Keypad Mode (State "20")

To enter the keypad mode (State "20") follow these steps.

1. Open the machine door with the machine in a Game Over state. This must be done before steps 2 and 3.
2. Actuate the jackpot release key switch.
3. Connect the keypad (part # AS-3311). If all 4 lamps do not turn on, reverse the keypad connector at J1 on the control board. (Fig. 6A-2)

The current jackpot amounts remain on the displays. All 4 lamps turn on. State "20" has been entered.

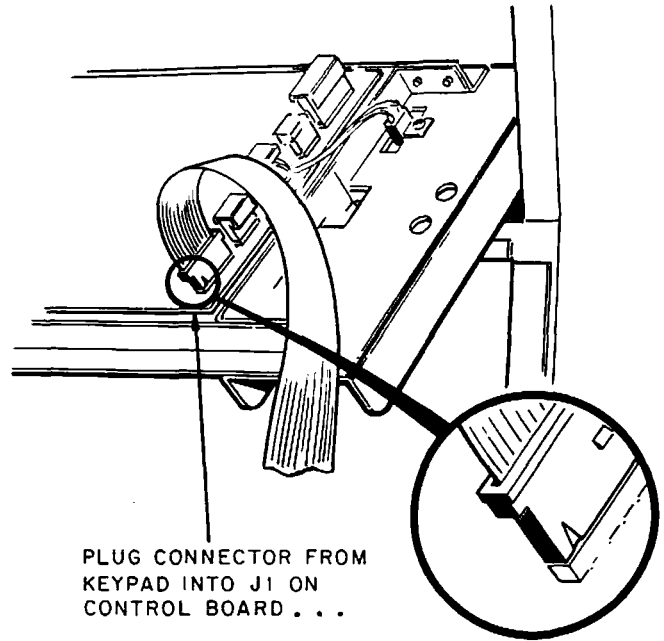


Fig. 6A-2

Set Option Mode (State "0")

To enter the set option mode (State "0"), press "KEYBD/CLR" (Fig. 6A-3) The upper and lower displays clear and "0" appears on the lower display.

Any of the following choices may be made:

1. Press "TEST". See Diagnostic Self-Test.
2. To set parameters and options, see Initialization.
3. Press "GAME" to return to State "20".
4. To return to Game state, see Return to Normal Game Operations.

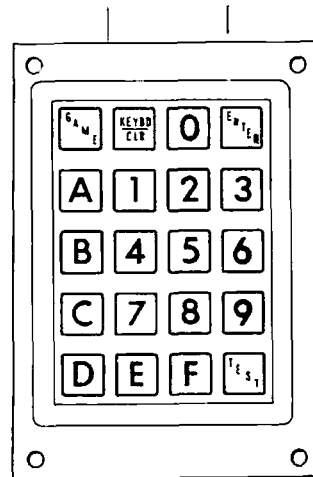


Fig. 6A-3

6A. DOUBLE PROGRESSIVE

Diagnostic Self-Test

From State "0", press the "TEST" key. The segments, 0-9, and blanks are checked. "0s" appear on the displays in each of the 16 digits; "1s" appear on the displays in each of the 16 digits; etc. (Fig. 6A-4) The number sequence continues until "GAME" is pressed or the Return to Normal Game Functions is followed.

NOTE: If any numbers do not display properly, see TROUBLESHOOTING CHART.

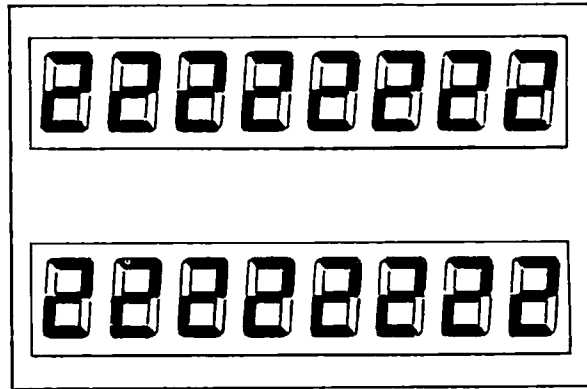


Fig. 6A-4

Initialization

The parameters and options are initialized from the Set Option Mode (State "0") using the keypad. After entering Keypad Mode (State "20") and then Set Option Mode (State "0"), follow these steps.

1. Press the proper key to choose any one of the parameters or options to be set. See PARAMETER/OPTION TABLE. They may be set in any order.

NOTE: Use enough digits to show cents if cents are indicated on the feature glass.

2. The amount appears on the upper display. The State number appears on the lower display. (Fig. 6A-5)
3. To change the amount or value, enter the desired number using the keypad. The first number pressed clears the display and then appears on the upper display. The numbers appear like a calculator, shifting from right to left.

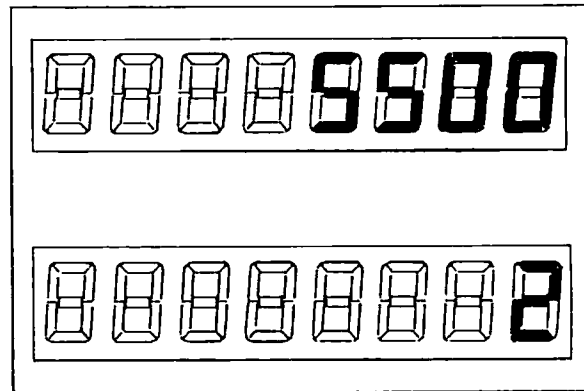


Fig. 6A-5

4. If an incorrect amount is entered, press "KEYBD/CLR" and re-enter the amount.
5. When the desired amount or value appears, press "ENTER". The number is set and State "20" is entered. The upper and lower jackpot amounts appear.
6. If no change is required, press "GAME". The value is kept and State "0" is entered.

PARAMETER/OPTION TABLE		
KEY	STATE	DESCRIPTION
A	1	Upper Display Minimum—the amount set to appear after a jackpot reset—minimum amount allowed is "0"
B	2	Upper Display Maximum—the highest limits set for the progressive jackpot—maximum amount allowed is "999,999.99" or "99,999,999"
C	3	Upper Display Jackpot—the amounts appearing when returning to Game State
D	4	Lower Display Minimum
E	5	Lower Display Maximum
F	6	Lower Display Jackpot
0	7	Number of Coin(s) per Toggle—The maximum value that can be entered is "255". The value "0" has the lamps toggle on the maximum number of coin(s) in per game.
1	8	Number of Coin(s) per Incrementation—The maximum value that can be entered is "255". The value "0" has the jackpot meters increment on the maximum number of coin(s) in per game.
2	9	Jackpot Increment Amount
3	10	Maximum Number of Coin(s) per Game—The maximum that can be entered is "255". NOTE:Set the maximum number of coins per game the same as the machine's maximum.
4	11	Single or Double Progressive—"1" represents single progressive option (MUST set option in State "13"). "2" represents double progressive option
5	12	Incrementation Speed—"0" represents a slow display incrementation rate—"1" represents a fast rate
6	13	Single Progressive—"1" represents the upper display. "2" represents the lower display.

6A. DOUBLE PROGRESSIVE

Return to Normal Game Operations

To return to normal game operations, follow these steps from any state.

1. Remove the keypad. This must be done before steps 2 and 3.
2. Turn the key switch off.
3. Close the door.

NOTE: If any parameter or option was changed, the lamp indicates the lower display. The counters for maximum coin in, coins in per toggle, and coins in per increment are all reset to "0".

If the parameters and options were only checked or if the diagnostic self-test was run, the lamps and counters will resume their position and count.

Verify Current System Parameters and Options

To check the current system parameters and options, follow the directions under these headings.

1. Keypad Mode (State "20")
2. Set Option Mode (State "0")
3. Initialization
4. Return to Normal Game Operations.

Upper and Lower Play

Example 1: The upper and lower jackpot amounts appear on the display board. The game begins with the lower display lamps lit. (Fig. 6A-6) The lamps are set to toggle on the 2nd coin. The number of coins in per incrementation is set to 3. The progression is set to 5 cents. The count for coins in per toggle and coins in per incrementation begin on the lower display.

The 1st coin is inserted. One coin is registered on each counter (the number of coins in per toggle and the number of coins in per incrementation). (Fig. 6A-7)

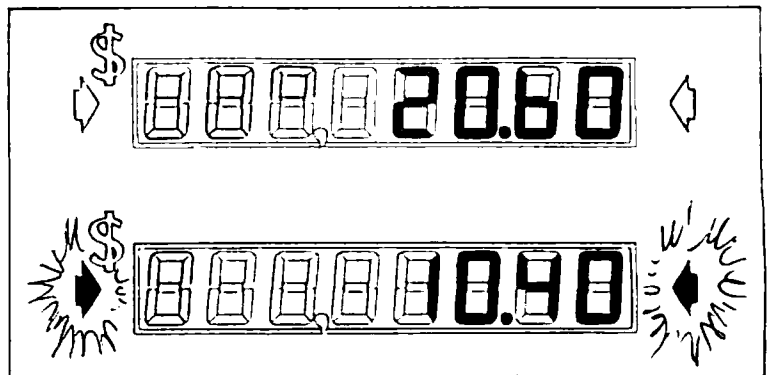


Fig. 6A-6

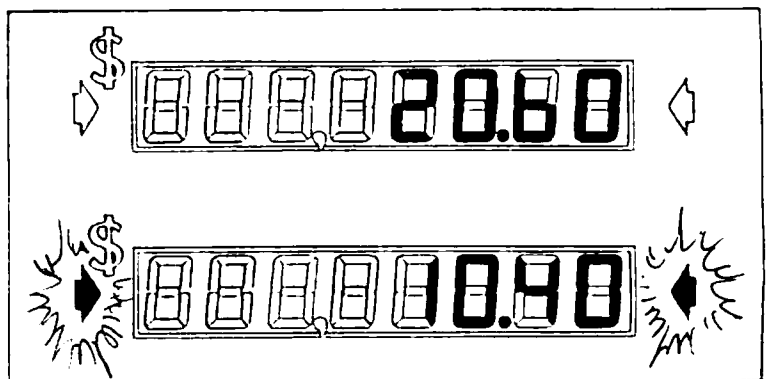


Fig. 6A-7

Upper and Lower Play (cont'd)

The 2nd coin is inserted. The lamps toggle to the upper display. The counter for coins in per Incrementation registers 2. (Fig. 6A-8)

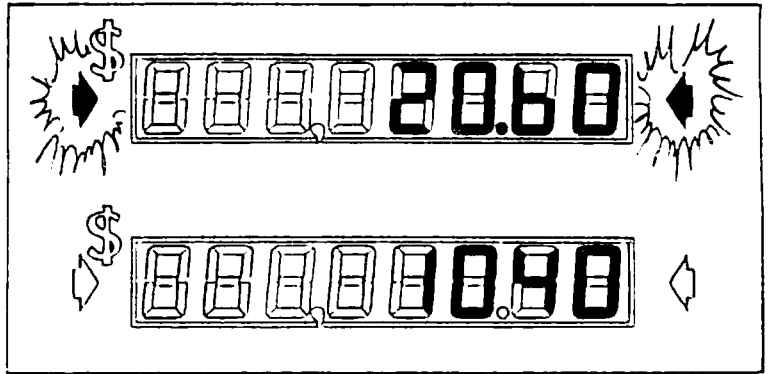


Fig. 6A-8

The 3rd coin is inserted. The counter for the number of coins in per toggle registers 1. The counter for the number of coins in per Incrementation registers 3, so the upper display increments 5 cents. (Fig. 6A-9)

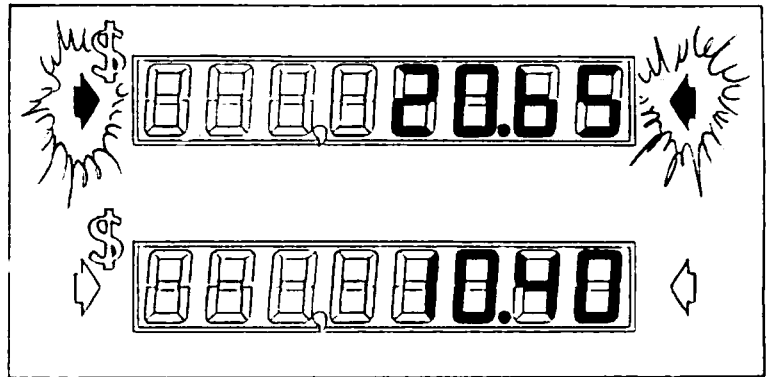


Fig. 6A-9

Example 2: The upper and lower jackpot amounts appear on the display board. The game begins with the lower display lamps lit. (Fig. 6A-10) The lamps are set to toggle on every coin. The number of coins in per Incrementation is set to 2. The progression rate is 10 cents.

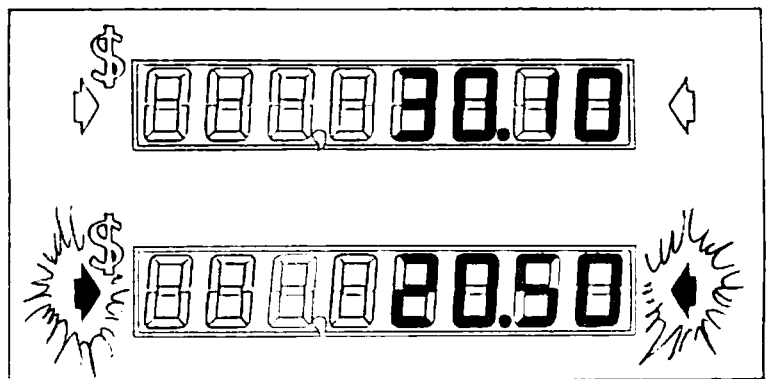


Fig. 6A-10

6A. DOUBLE PROGRESSIVE

Upper and Lower Play (cont'd)

The 1st coin is inserted. The lamps toggle to the upper display. The counter for the number of coins in per incrementation registers 1. (Fig. 6A-11)

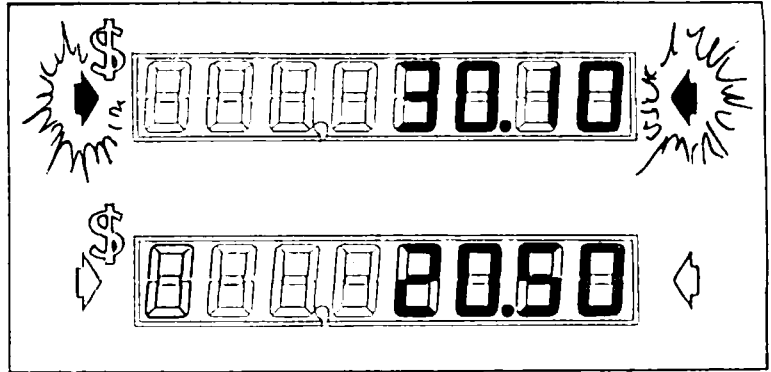


Fig. 6A-11

The 2nd coin is inserted. The lamps toggle to the lower display. The counter for the coins in per incrementation registers 2 so the upper display increments 10 cents. (Fig. 6A-12)

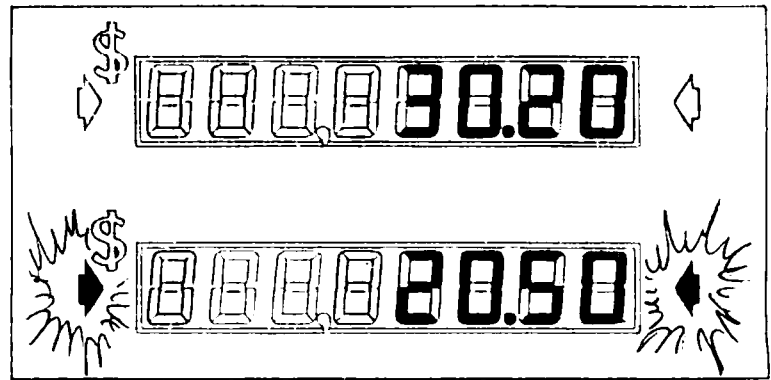


Fig. 6A-12

Jackpot reaches maximum limit:

When either progressive jackpot reaches its maximum limit, that jackpot does not increment further. The other progressive jackpot continues to increment at the present progression amount according to the number of coins. The lamps continue to toggle as optioned enabling the player to win either jackpot.

When both the upper and lower progressive jackpots reach maximum values, there is no incrementation. However, the lamps continue to toggle as optioned.

When the increment to the jackpot amount calculates higher than the jackpot maximum limit, the display stops at the maximum limit.

Jackpot winner:

The player wins the jackpot indicated by the glowing lamps. The machine immediately locks up. The tower light summons an attendant to pay the winner.

Upper and Lower Play (cont'd)

Jackpot reset:

The user performs a jackpot reset by actuating the key switch on the side of the machine. The winning jackpot display resets to the preset minimum value. The counters for coins in per toggle and coins in per incrementation do not reset.

Bookkeeping Meter

Number of Jackpot Wins Meter: Actuate the key switch when the machine is in a Game Over state and the door is closed. The number of jackpot wins appears on the upper display. The State "15" appears on the lower display.

This meter clears when the Clear Safe RAM chip is used.

Tilts

When a malfunction occurs, all 4 lamps flash. An error code appears on the upper display. (Fig. 6A-13)

Press the "PRESS FOR SERVICE" button to call an attendant.

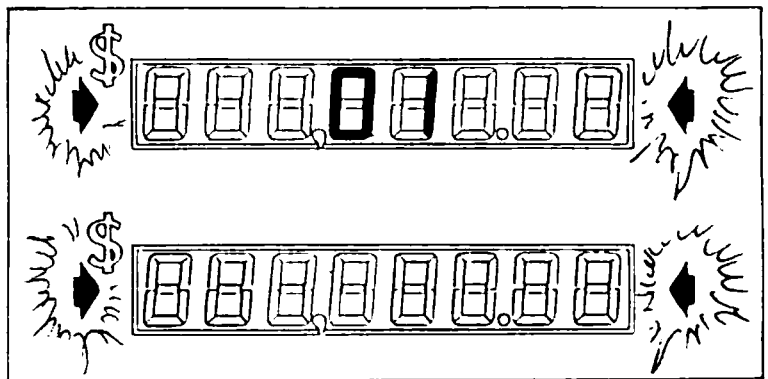


Fig. 6A-13

6A. DOUBLE PROGRESSIVE

POWER UP MALFUNCTION TILT TABLE		
Tilt Code	Malfunction Condition	Remedy
"01"	Bad Safe RAM battery	Replace Safe RAM chip
"02"	PROM check error	Replace EPROM and clear Safe RAM chip (replace Safe RAM chip if needed)
"03"	Wrong State (Improper mode of operation)	Enter State "0" and initialize all parameters and options (tilt code clears after the first is set)
"04"	Bad checksum (meter values do not match with safety values)	Enter State "0" and initialize all parameters and options (tilt code does not clear until all are set)

OPERATIONS MALFUNCTION TILT TABLE		
Tilt Code	Malfunction Condition	Remedy
"02"	PROM check error	Replace Safe RAM chip
"09"	Jackpot increment amount is set to "0"	Enter State "0" and set the value in State "9"
"10"	Maximum number of coins per game is set to "0"	Enter State "0" and set the value in State "10"
"11"	UDPD is not set for single or double display	Enter State "0" and set the value in State "11"
"13"	Single progressive not to "1" or "2"	Enter State "0" and set the value in State "13"

TROUBLESHOOTING CHART		
PROBLEMS	PROBABLE CAUSE	REMEDY
Control & display board does not respond	Faulty connections	Secure all individual wires and connectors
	TP1 (test point 1) does not read 12 VDC	Need power supply from machine
	TP2 does not read 5 VAC	Replace voltage regulator
	TP5 reads 5 VAC; CPU is reset	Release reset by removing static disturbance and/or replacing clock crystal
Lamps do not light	Faulty light bulbs	Replace
	TP4 reads less than 7.5 VAC	Test power supply to J3
Fluorescent lamps do not light	Faulty ballast starter	Replace
Lamps do not toggle with each coin	Toggle option needs to be reset	Check State "7"
	Door open condition sensed	Close door or turn key to closed position
	Jackpot hit	Reset Jackpot
Lamps do not toggle as desired	Toggle option needs to be reset	Check State "7"
Can not enter State "20" Keypad Mode	Did not follow steps exactly	See <u>State "20" Keypad Mode</u>
	Keypad reversed	

6A. DOUBLE PROGRESSIVE

TROUBLESHOOTING CHART (cont'd)		
PROBLEMS	PROBABLE CAUSE	REMEDY
Various segments of digits do not display	Segment not moving freely	Loosen bezel covering segments
	Faulty connections	Secure connections between control & display board
Digit segments are changed manually	Power off	Power up machine; memory restores digit segments to previous jackpot amounts
Jackpot max. limit appears-- not the jackpot amount set	Jackpot amount is set higher than max. limit	See <u>Initialization</u>
Jackpot min. limit appears-- not the jackpot amount set	Jackpot amount is set lower than min. limit	See <u>Initialization</u>
Jackpot min. limit appears as zero	Jackpot min. limit is set higher than max. limit	See <u>Initialization</u>
	Jackpot max. limit is set lower than min. limit	See <u>Initialization</u>
Jackpot amount does not increment	Jackpot reached max. limit	
	Door open condition sensed	Close door or turn key to closed position
	Jackpot hit	Reset jackpot
	Preset number of coins in/incrementation has not been reached	
Jackpot amount does not increase by the complete increment	Jackpot reached max. limit before using total increment	Functioning properly
Only lower jackpot functions	Single progressive option has been set	See <u>Initialization</u>

7. GLOSSARY

attendant (hand) paid jackpot--All or any portion of the coins won that require an attendant to pay the player.

BAUD rate--The signaling rate at which data is transmitted and received.

bezel--A cover or flange used for mounting or holding an item in place.

CPU--Central Processing Unit. A computer system's "brain", whose arithmetic, control, and logic elements direct functions and perform computations.

Checksum--A value stored in a specific location in the program that is constantly checked to verify there is no corruption in any of the programmed data.

chip--device--An integrated circuit.

coin in count--The number of coins inserted for the game.

coin out count--The number of coins paid out for the game.

device--chip--An integrated circuit.

EPROM--Erasable, Programmable Read-Only Memory. Operates in the same manner as a PROM except that the user can erase any program entered using an ultraviolet light bath. Can be reprogrammed as often as necessary during program design and development, then replaced by ROM for mass production.

Game state--The mode of operation when the UDPD system sets itself to acknowledge a wager unit which initiates a new cycle and to accept the steps necessary for initialization and reading the bookkeeping meter.

Game Over state--That point in the game cycle when the machine sets itself to accept wager units to initiate a new game sequence.

I/O--Input/Output. Transferring data in and out of a device.

IC--Integrated Circuit. A combination of inter-connected circuit elements inseparably associated on or within a continuous supporting material.

Index--The reels stop spinning.

MCU--Microprogram Control Unit. Sequence of instructions corresponding to a computer operation, whose execution is initiated by the introduction of a computer instruction into an instruction register of a computer. Often used in place of hardwired logic.

Message Center--A vacuum-fluorescent dot-matrix display with 2 rows of 20 characters. It displays messages on initialization, game status, meters, and malfunctions.

MPU--Microprocessing Unit. One of several microcircuits that perform the function of a computer CPU.

7. GLOSSARY

RAM--Random Access Memory. Stores binary data bits as electrical charges in transistor memory cells. Can be read or modified through the CPU. Stores input instructions, results, and other constantly changed data. When power is removed, memory is erased unless a "Safe RAM" (battery powered backup) is provided.

ROM--Read-Only Memory. The binary on-off bit pattern containing the program is set into the ROM during manufacturing, usually as part of the last metal layer placed onto the integrated circuit. ROM is not erasable.

SDS--Slot Data System. On-line slot monitoring and accounting system. SDS monitors, measures, records, and reports all phases of slot activity as they occur on the casino floor.

sensor--A group of optical switches operating together to provide the CPU with information on a certain input.

state--Designates a particular mode of operation.

Toggle--The Jackpot indicator lamps alternate between the upper and lower displays.

valid wager--A wager unit accepted by the machine when the door is closed.

wager unit--Any coin, token, or credit that represents the player's stake.

APPENDIX 1 W-1046-3066 Overall Wiring Diagram

This diagram is to be used for service and maintenance procedures described in this manual. A full-size copy of this drawing can be obtained from your BALLY distributor or BALLY Manufacturing in Bensenville, IL.

-WARNING-

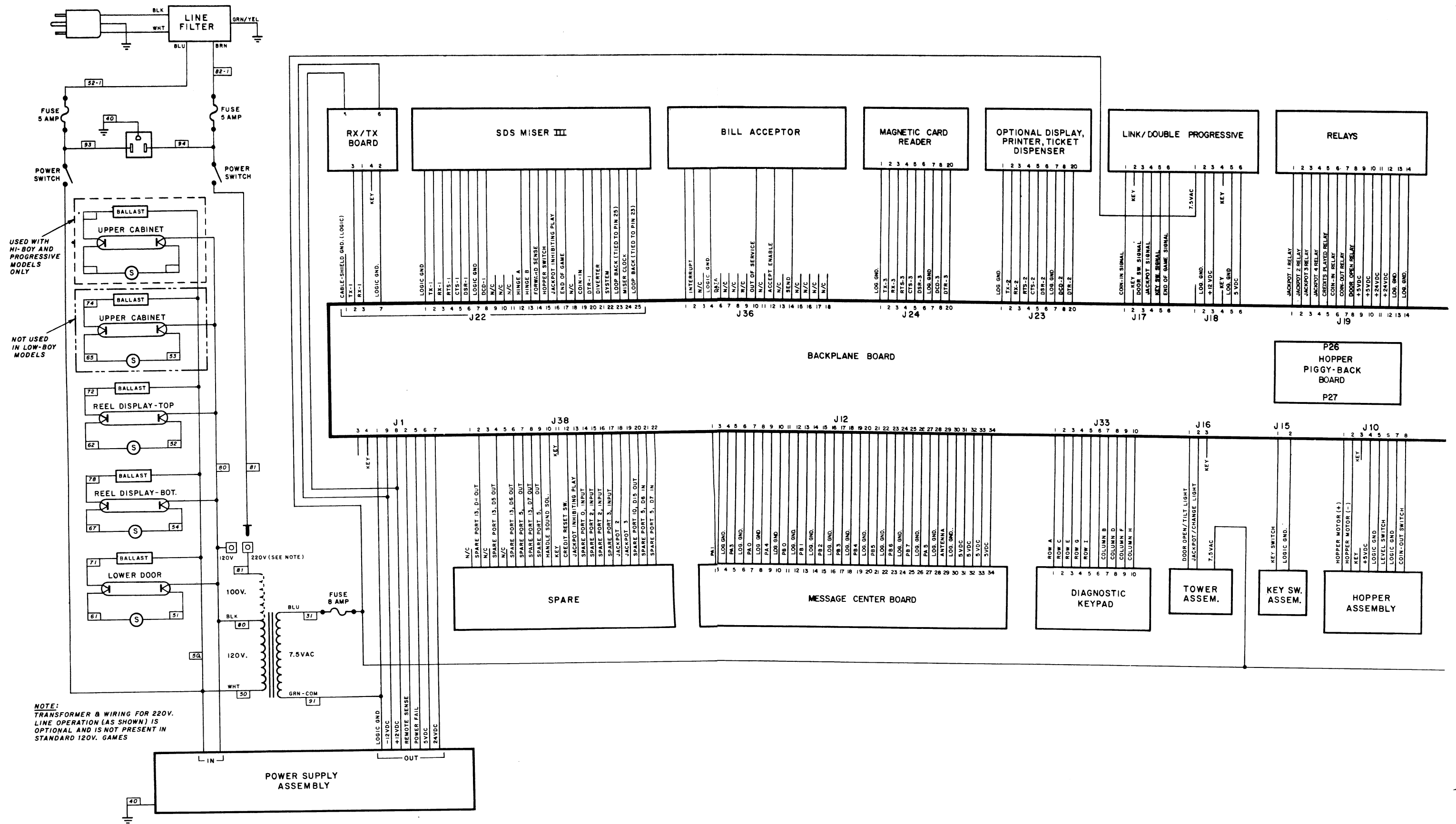
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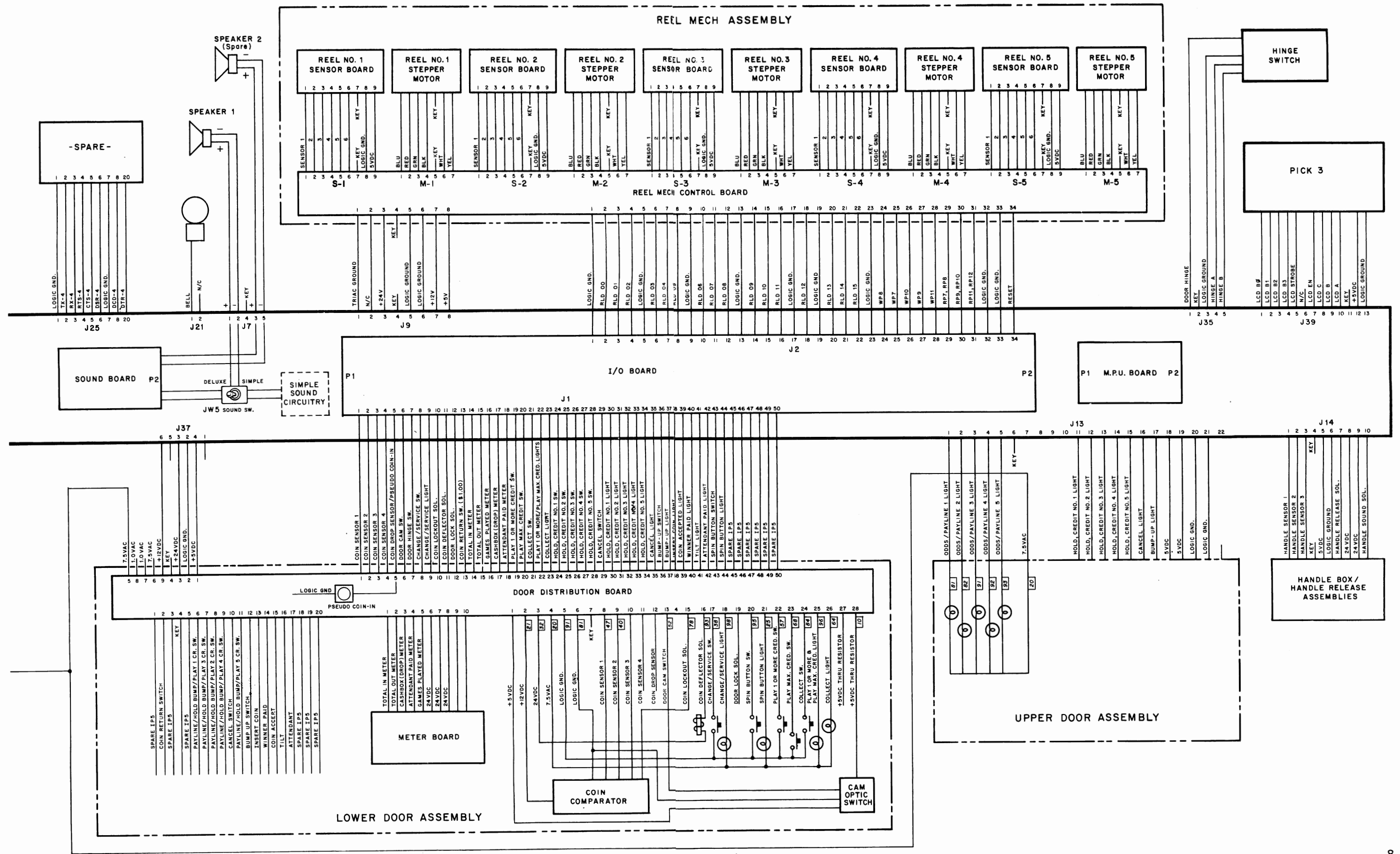


8. APPENDICES

W-1046-3066 Overall Wiring Diagram



W-1046-3C66 Overall Wiring Diagram





8. APPENDICES

APPENDIX 2 Related BALLY Publications

FO-5000-1 BALLY System 5000 Training and Troubleshooting Manual

This manual is for the senior service technician. With this information, the senior service technician can learn to troubleshoot the boards down to the component level. The manual continues to serve the senior service technician as a reference guide.

FO-5000-2 BALLY System 5000 Slot Attendant Manual

This manual is for the slot attendant. By following each section's step-by-step procedures, the slot attendant can become familiar with the BALLY System 5000 Slot Machine.

FO-5000-3 BALLY System 5000 Parts Catalog

APPENDIX 3 "STATIC CONTROL: Avoiding the zap that destroys components and
Inflates service costs"

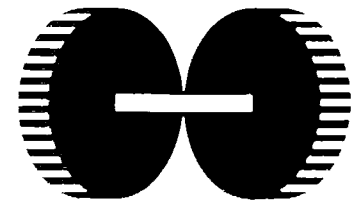
Courtesy of 3M/Static Control Systems Division



8. APPENDICES

APPENDIX 4 Coin Mechanism Inc.





COIN COMPARITOR

CC-62-A COIN COMPARITOR WITH "B" STYLE INTERFACE

The 62-A Comparitor is a specially designed system offering the most positive coin accepting capability currently manufactured. However, proper use of this unit requires special machine software to correctly read this Comparitor's signals. Unlike the CC-40 and CC-50 series Comparitors, the CC-62-A does not determine a valid coin. Instead, it delivers two separate "Coin Sensing" signals to the machine which allows the software to determine a valid coin. These two signals are defined as:

1. Coin sense signal from Comparitor coils
2. LED sense signal from coin accept track.

These two features offer several advantages to the machine's coin handling capability:

1. It allows the machine to Pre-count valid coins to increase its capability of protecting against "over-coining".
2. It protects against "Piggy-Back" slug validation because no coin sense signal would be generated.
3. Decreased signal sampling rates and specially positioned optics offer edge-to-edge coin handling and validation. The most precise form possible.

An additional feature of the CC-62-A is a third signal defined as an "error" signal. This is a separate code delivered to the machine on one line in two separate formats:

1. Reverse coin code for anti-stringing protection.
2. Coin Jam code for indicating optic failure or an actual coin jam in the optic area.

POSITIVE INHIBIT FEATURE

Another unique characteristic of the CC-62-A Comparitor is its Inhibit feature. Unlike earlier models, this Comparitor has the ability to "Lock-out" electronically without having to turn power off to the unit. Therefore, when the Inhibit Signal is delivered to the 62-A, it happens immediately, prohibiting the Accept Coil Only from actuating even if a good coin is sensed by the Comparitor coils. This method of inhibit allows the unit to maintain full power-up so that there is no time delay for Inhibit, and the Sensing lines can still be monitored.

The CC-62-A with correct machine software is unquestionably the fastest, most reliable Coin Comparitor validation system available.

COIN SIZE SPECIFICATION

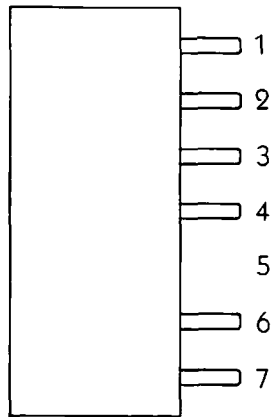
The CC-62-A Comparitor is capable of handling any coin size from U.S. 10¢ to the 40mm Token. Adjustments to vary denomination are mandatory for proper operation (See denomination adjustments.)

Coin diameter range .705" through 1.575" (17.9mm through 40mm).

Note: For diameter of 1.205" through 1.575" (30.6mm through 40mm), a plug spacer is recommended.

Recommended maximum thickness of coin: .110" (2.79mm).

Coin entry slot control is necessary for oversize protection beyond .040" (1.02mm) of coin in sample holder.



1. GROUND
2. COIN SENSE
3. ERROR
4. CREDIT
5. N.C.
6. +12VDC.
7. INHIBIT

VOLTAGE

The operating voltage for the CC-62-A is 12 Volt DC Only.

Current demand: Idle 50m Amps
Peak 170m Amps

Note: There is NO protective diode on the voltage input line. Therefore, care must be taken not to reverse +12 Volt and ground.

DENOMINATION ADJUSTMENT

Due to the timing parameters required by the machine's software, there are adjustments necessary to allow for optimum coin handling capability. These are separated into two areas:

1. Dampener lever weight specification
2. Rail adjustment

Dampener Weight Specification:

- 10¢ — No weight used
- 5¢ — Standard weight (P/N CC-262-A)
- 25¢ — Standard weight (P/N CC-262-A)
- 50¢ — Standard weight (P/N CC-262-A)
- \$ Token — 5/8" weight (P/N X-889)

Rail adjustment:

Proper rail adjustment is mandatory for correct operation of the CC-62-A. To adjust, loosen rail screw (2D) and position bottom of rail (2A) so that you have the full diameter of the coin's width plus 1/32" over. (This allows for smoother coin travel but will maintain correct optic timing for the software to read.) After adjusting rail, make sure to fully tighten the rail screw to hold the adjustment. An adjusting gauge is available from the factory to ease this procedure (P/N CC-62G).

POTENTIOMETER ADJUSTMENT

Each Comparitor leaving the factory is adjusted to give excellent discrimination against slugs. However, some high quality slugs may need a finer adjustment:

1. Adjust pot CW until high quality slug is rejected.
2. Insert proper coin to ensure proper acceptance.
3. Repeat steps 1 and 2, if necessary.