Fortune II Series

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Fortune II Series

WARRANTY

IGT International Game Technology products are warranted against defects in workmanship and materials for a period of one month following date of shipment, except monitors, lamps, switches, coin acceptors, counters, fans and connectors are warranted against defects in workmanship and materials for a period of three (3) months following date of shipment. Equipment or parts not manufactured by IGT International Game Technology are specifically excluded from this warranty. IGT INTERNATIONAL GAME TECHNOLOGY MAKES NO WARRANTY, EXPRESS OR IMPLIED, OF DESIGN, FITNESS OR FITNESS FOR A PARTICULAR PURPOSE AND NO OTHER WARRANTIES, EXPRESS OR IMPLIED ARE MADE HEREIN. In no event will IGT International Game Technology be liable for any incidental or consequential charges. IGT International Game Technology's sole obligation under this warranty shall be limited to the repairs or replacement of materials or parts covered by the warranty and such repair or replacement shall occur FOB IGT International Game Technology, Reno, NV.

Minor deviations from specifications which do not affect performance of the merchandise covered hereby shall not be deemed to constitute defects of workmanship, materials or construction of a failure to comply with the specifications referred to herein. This warranty shall be void if IGT International Game Technology products are operated or maintained other than as specified in the product Operations Manual.

WARNING

The following servicing instructions are for use by **QUALIFIED PERSONNEL ONLY.** To avoid personal injury or damage to the equipment, do not perform any servicing other than that contained in this manual.

FORTUNE II SERIES

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FORTUNE II SERIES

SECTION I
GENERAL INFORMATION

INTRODUCTION

The IGT Fortune II video gaming machine has been professionally engineered to provide a new level of machine flexibility, economical installation and simplified maintenance.

SPECIAL FEATURES

One of the advantages of the Fortune II series is that one cabinet houses all IGT games. The Fortune II quickly and economically converts to any game, denomination and/or special feature required, in a minimal amount of time.

The Fortune II machine uses the IGT 8051 circuit board system. The 8051 system provides the following unique features:

- Microprocessor control of the game.
- Modular component design.
- Door open sensor.
- Backup battery for memory circuit.
- Low voltage sensing circuit.
- Error detection circuitry.
- Sound generation.
- Self Test and Statistical Display modes.

OPTIONS

The following options are available for the Fortune II series:

- A large selection of program percentages are available, as well as credit play features, progressive features and animation features.
- Denomination can be quickly changed (approximately five minutes) to any U.S. coin or gaming token.
- Side panels on cabinet are available in six standard colors.
- Slots are available with handle and/or "Play" button.
- Coins are dropped into either a tray or a loud bowl stand.
- A variety of sound choices are available, ranging from a stand slot bell to various electronic tones, music, voice or custom sounds.
- Upper glass lighting is available in standard back lighting or three and five coin sequencer.
- A large selection of candle colors are available.
- Power supplies and line cords are available in both U.S. and foreign configurations.
- A variety of top box assemblies are available.

SPECIFICATIONS

Table 1-1 lists the electrical, physical and environmental specifications for the Fortune II series.

POWER REQUIREMENTS

The IGT Fortune II machine operates from 103-125VAC at 50/60 Hz and at 220VAC at 50/60 Hz for foreign games. A transformer is

used to provide power to all components requiring isolated voltages.

Table 1-2 lists the transformer output AC voltages and transformer tap selections. Figure 1-1 provides a schematic diagram for the transformer.

ELECTRICAL

POWER CONSUMPTION:	115VAC LINE INPUT AT 50/60 Hz STANDARD
Average When IDLE	230 Watts - 115VAC @ 2.0 Amps
Worst Case W/Hopper ON	575 Watts - 115VAC @ 5.0 Amps
POWER CONSUMPTION:	220VAC LINE INPUT AT 50/60 Hz STANDARD
Average When IDLE	220 Watts - 220VAC @ 1.0 Amps
Worst Case W/Hopper ON	550 Watts - 220VAC @ 2.5 Amps

PHYSICAL

Dimensions	Height:	34.00 inches 86.36 cm
	Base Width:	18.00 inches 45.72 cm
	Base Depth:	21.00 inches 53.34 cm

ENVIRONMENTAL

Temperature	Operating:	32° F - 122° F AMB 0° C - 50° C
	Storage	32° F - 176° F AMB 0° C - 80° C
Humidity (Relative)		5% - 90%

Table 1-1
General Specifications

TRANSFORMER OUTPUT VOLTAGE	TRANSFORMER TAP
110 - 120 VAC COM	1
110VAC HOT	2
220VAC HOT	3
24VAC	4
24VAC RETURN	5
110VAC ISO.	6
110VAC ISO. RETURN	7
10VAC	8
10VAC RETURN	9
7VAC	10
7VAC RETURN	11
8VAC	12
8VAC RETURN	13

Table 1-2
Transformer Tap Selection

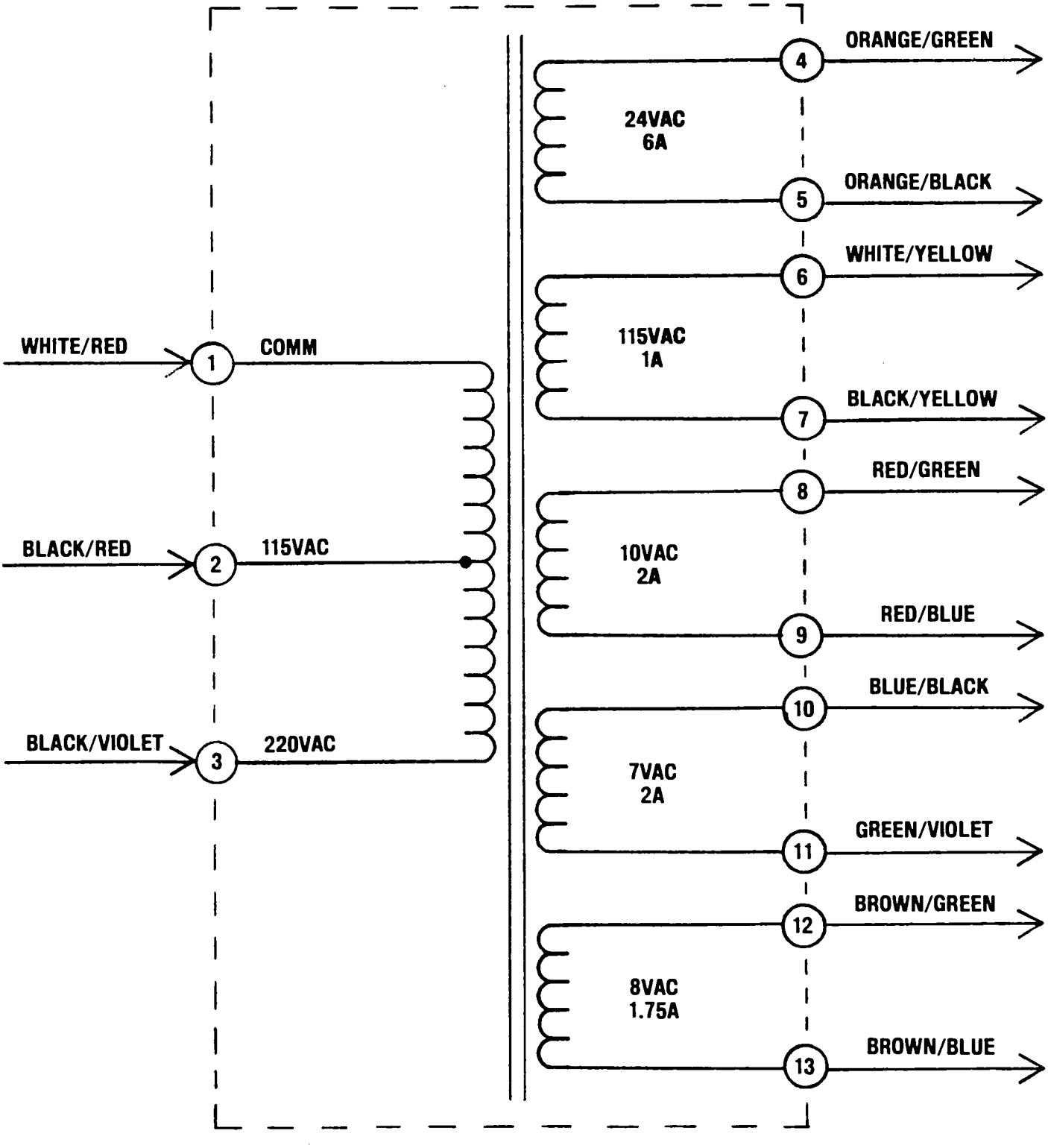

Figure 1-1
Schematic Diagram - Transformer

Section II

SECTION II
INSPECTION AND INSTALLATION

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SECTION II
INSPECTION AND INSTALLATION

INTRODUCTION

This section provides general inspection procedures and installation procedures for the Fortune II machine.

INSPECTION

Check the exterior of the machine to verify that the machine is free from scratches, chips, blemishes and any mechanical damage.

Check the glass for proper alignment, scratches and cracks.

Check the interior of the machine, making sure none of the components are disconnected or loose.

Open the card cage and make sure the circuit boards are securely connected to the Mother board. The upper tray holds the Microprocessor board and the lower tray holds the Vocal Effects Module or the Tone Generator Module, and the Interface board.

Check that the harnessing wires are properly routed and secured.

Make sure that all electrical connections are tight and that proper antichafe protection has been used.

INSTALLATION

To mount the machine on the stand, proceed as follows:

1) Set the machine on the stand and align the mounting holes on the floor of the machine with those on the top of the stand.

2) Secure the machine to the stand with at least two 5/16" X 2-1/2" carriage bolts with flat washers and hex nuts. Insert bolts in each hole from the inside of the machine.

ADJUSTMENTS

See Section V, Field Service and Maintenance, for complete instructions on all adjustments concerning the Fortune II series. A wiring diagram is also provided in that section.

CLEARING THE RAM/SETTING THE STATISTICAL DISPLAY TO ZERO

During the initial setup of the machine, or when replacing a new set of game programs, the RAM must be cleared to reset the statistical displays to ZERO.

NOTE

This procedure is **ONLY** to be done on **FIRST TIME CHECKOUT,** as valuable meter data can otherwise be lost.

To clear the RAM, proceed as follows:

1) Turn the main power to the machine OFF and remove the Microprocessor board from the card cage.

2) The CMOS RAM module is located on the left side of the board. Move the switch on the RAM to RESET and then back to ON. This will clear the RAM.

After the RAM is cleared, replace the Microprocessor board and proceed with the OPERATIONAL TEST procedures in Section IV.

NOTE

The RAM switch may be in the OFF position during storage and transportation. Make sure that this switch is in the ON position before turning on the main power to the machine.

RETURNING FOR DAMAGE ADJUSTMENT

As per the "General Terms and Conditions of Sales", no merchandise may be returned for adjustment without prior written approval of IGT. No credit or replacement will be effected until alleged defects are established to IGT's satisfaction by tests and inspections to be performed by IGT at any reasonable time and place it designates.

Section III

SECTION III
GAME INSTRUCTIONS

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SECTION III
GAME INSTRUCTIONS

INTRODUCTION

This section provides the game instructions for the Fortune II machine.

GAME INSTRUCTIONS - SINGLE HAND, REGULAR DRAW POKER

PLAYER SWITCHES: DEAL/DRAW, HOLD/CANCEL. Each switch will illuminate whenever that function can be used.

DEAL/DRAW: Push to deal first five cards; push to draw after holding desired cards.

HOLD/CANCEL: Push to hold any desired cards; push again to release held cards.

One to five coins can be played to start the game. After the first coin is accepted, the following will occur:

1) The previous game cards will disappear and the first column of the paytable will turn RED. Each column of the paytable illuminates to indicate the number of coins accepted.

2) The number of coins bet on the previous game will appear in the bottom left corner of the screen.

3) INSERT COIN and PLAY 1 TO 5 COINS will continue to flash until the DEAL/DRAW switch is pressed, or until five coins are played.

If five coins are played the hand will automatically be dealt. If fewer than five coins are played the DEAL/DRAW switch must be pushed to start the game.

Five cards will be dealt face up. To hold any of the cards, push the corresponding HOLD/CANCEL switch for that card. The word HELD will appear over the card. To cancel the hold, push the HOLD/CANCEL switch again.

If the hand is a winner and no cards are to be discarded, push ALL FIVE HOLD/CANCEL switches and then push the DEAL/DRAW switch.

If the hand is an automatic winner, the machine will not allow the player to improve the hand. An automatic winner is 4 of a Kind or better in non-joker versions and a Straight Flush or better in joker versions.

If the hand is not a winner, hold the desired cards and push the DEAL/DRAW switch. The unheld cards will be replaced and the game will be over.

WIN CONDITION - HOPPER PAY

The winning hand is flashed in the paytable along with the amount won. WINNER PAID will appear at the bottom of the screen along with the number of coins paid out. The number of coins will be incremented on the screen as the hopper pays each coin.

WIN CONDITION - HAND PAY

A "hand pay" condition occurs when the amount won is in excess of the maximum hopper pay.

The winning hand is flashed in the paytable along with the amount won. CALL ATTENDANT and HAND PAY alternately flash below the hand.

The game must be reset by authorized personnel to continue play.

LOSE CONDITION

If the final hand is not a winner, GAME OVER and INSERT COIN will alternately flash below the cards and PLAY 1 TO 5 COINS will move across the top of the screen.

GAME INSTRUCTIONS - DOUBLE HAND, REGULAR DRAW POKER

Same as Single Hand, Regular Draw Poker, with the following exceptions:

Two hands are dealt face up. Both hands are evaluated and the values are displayed below the appropriate hand.

To play the top hand, the player must push the leftmost HOLD/-CANCEL switch. The word **YES** will flash on the screen above that switch.

To play the bottom hand, the player must push the rightmost HOLD/CANCEL switch. The word **NO** will flash on the screen above that switch.

If either or both hands are automatic winners, the machine will select the better hand for the player.

The unchosen hand is then removed and the game returns to Single Hand, Regular Draw Poker play.

GAME INSTRUCTIONS - SINGLE HAND, PLAY CREDIT DRAW POKER

Same as Single Hand, Regular Draw Poker, with the following exceptions:

PLAYER SWITCHES: BET 1 COIN, PLAY MAX COINS, CASHOUT. Each switch will illuminate whenever that function can be used.

BET 1 COIN: Push to bet one credit; hold down to increment credits one at a time.

PLAY MAX COINS: Push to automatically bet maximum credits allowed per game (five).

CASHOUT: Push to cashout accumulated credits/coins.

WIN CONDITION

Amount won will appear as credits. CASHOUT switch must be pushed to collect winnings.

GAME INSTRUCTIONS - DOUBLE HAND, PLAY CREDIT DRAW POKER

Same as Double Hand, Regular Draw Poker, with the same exceptions as Single Hand, Play Credit Draw Poker.

GAME INSTRUCTIONS - REGULAR SLOT

One to three coins can be played to start the game. After the first coin is accepted, the following will occur:

1) GAME OVER will disappear and the middle line marker **1** will appear. As each coin is accepted, the corresponding line marker will appear.

2) The number **1** will appear next to COIN IN on the left side of the display and the number of coins bet on the previous game will appear in the bottom left corner of the screen.

3) INSERT COIN will continue flashing and PLAY 1 TO 3 COINS will continue to move across the screen, until the handle is pulled or until three coins are played.

When the desired number of coins have been accepted, the handle must be pulled to start the game.

HANDLE PULL/REEL SPIN

When the handle is pulled, the reels start to spin. The reels will stop one at a time, much like a mechanical slot machine.

WIN CONDITION - HOPPER PAY

A jackpot is any one of the winning combinations shown on the paytable. When a jackpot is hit, WINNER PAID appears on the right side of the screen along with the number of coins paid out. The number of coins will be incremented on the screen as the hopper pays each coin.

WIN CONDITION - HAND PAY

A "hand pay" condition occurs when the amount won is in excess of the maximum hopper pay.

When a large jackpot is hit, the jackpot light will turn on and CALL ATTENDANT and HAND PAY will alternately flash on the screen. The game will lockout until the jackpot is paid and the game has been reset by authorized personnel.

LOSE CONDITION

If no jackpot is hit on any of the lines with pay markers, GAME OVER will appear on the left side of the screen and PLAY 1 TO 3 COINS will move across the top of the screen. INSERT COIN will flash on and off at the bottom of the screen.

GAME INSTRUCTIONS - PLAY CREDIT SLOT

Same as Regular Slot, with the following exceptions:

PLAYER SWITCHES: BET 1 COIN, PLAY MAX COINS, CASHOUT. Each switch will illuminate whenever that function can be used.

BET 1 COIN: Push to bet one credit; hold down to increment credits one at a time.

PLAY MAX COINS: Push to automatically bet the maximum coins allowed per game (three).

CASHOUT: Push to cashout accumulated credits/coins.

WIN CONDITION

Amount won will appear as credits. CASHOUT switch must be pushed to collect winnings.

Section IV

SECTION IV
OPERATIONAL TESTS

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SECTION IV
OPERATIONAL TESTS

INTRODUCTION

The following procedures and test modes are designed to aid in the functional checkout of the Fortune II machine.

The Self Test mode provides the functional checkout of all used input and output ports, while the Statistical Display mode displays all RAM meter data.

OPERATIONAL TESTS - DRAW POKER

Proceed with the functional checkout as follows:

1) Turn the main power ON and allow the machine to warm up. See Figure 4-1.

IDLE MODE GRAPHICS

The Idle mode program is activated when the game is not being played.

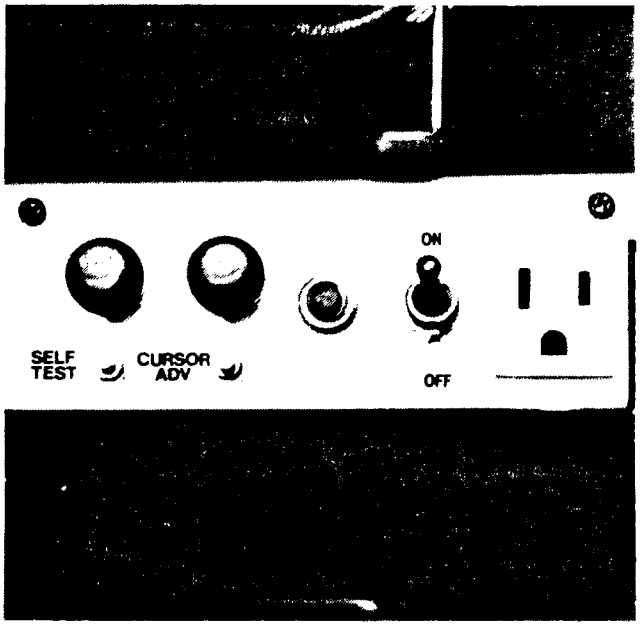


Figure 4-1
Location of Test Switches

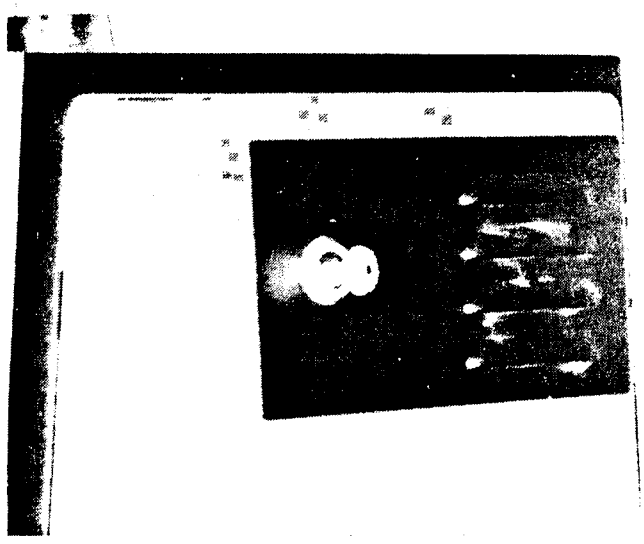


Figure 4-2
Statistical Display Key Switch

1) When the game is in the Idle mode, the screen will display the following moving messages: PLAY 1 TO 5 COINS, INSERT COIN and GAME OVER.

2) If the screen is blank or if the Idle mode messages are NOT moving, refer to the IGT 8051 Tester Manual on video troubleshooting, or contact IGT Customer Services.

3) If any of the following error messages appear, refer to the IGT 8051 Tester Manual on video troubleshooting, or contact IGT Customer Services.

A) BAD RAM

B) BAD EPROM

C) BAD MASK ROM

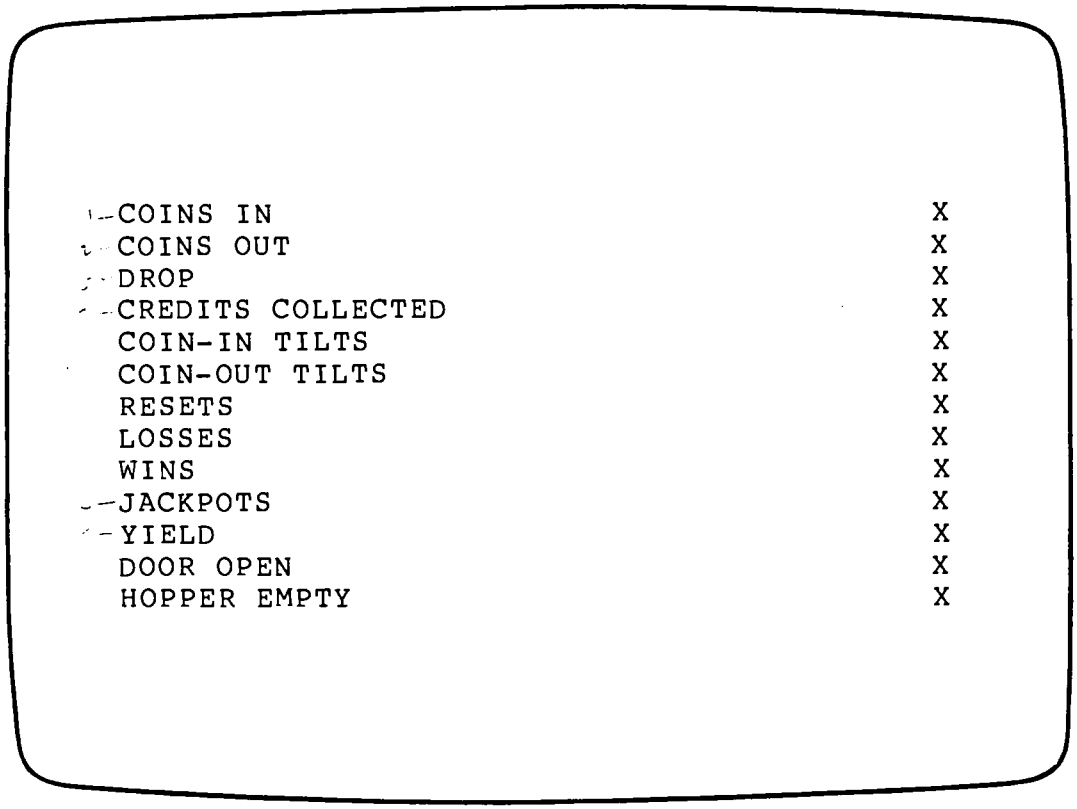
STATISTICAL DISPLAY MODE

The Statistical Display mode is activated by turning the Statistical Display key switch. See Figure 4-2.

The Statistical Display mode provides a sequence of information screens. By repeatedly turning the key switch, all information screens can be accessed. The following describes the information provided by each screen.

NOTE

The RAM meter data will indicate ZERO after the CMOS RAM has been RESET.



COINS IN	X	Accumulated Total of Coins In
COINS OUT	X	Accumulated Total of Coins Out
DROP	X	Accumulated Total of Coins Dropped in Box
CREDITS COLLECTED	X	Credits Paid by Attendant
COIN-IN TILTS	X	Number of Coins In Jammed
COIN-OUT TILTS	X	Number of Coins Out Jammed
RESETS	X	Number of Hardware RESETS or Power Down
LOSSES	X	Total Games Played, NO pay
WINS	X	Accumulated Total of Wins
JACKPOTS	X	Accumulated Hand Paid Total
YIELD	X	YIELD = COIN IN - COIN OUT - JACKPOT
DOOR OPEN	X	Number of Times Door is Opened
HOPPER EMPTY	X	Number of Times Hopper is Empty

Figure 4-3

RAM Meter Data
Draw Poker

See Section II for RAM reset instructions.

1) The first screen displays data on the game statistics (RAM meter data). See Figure 4-3.

2) The second screen provides coin-in information for the number of coins played. See Figure 4-4.

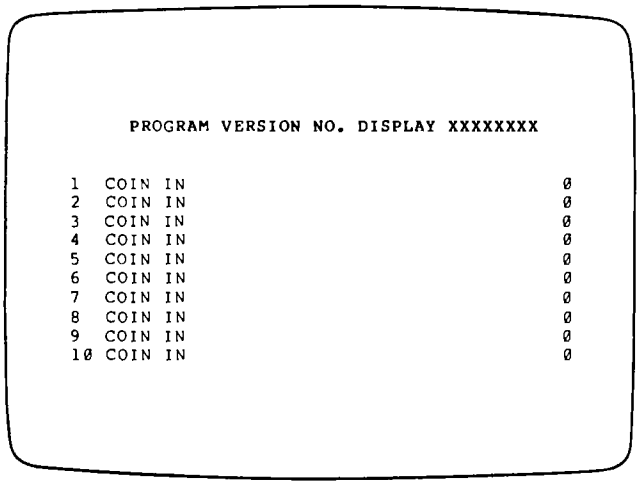


Figure 4-4

Games Played by Coins In Draw Poker

3) The third screen displays the type and total hands won data. See Figure 4-5.

4) The next several screens show the total number of hands played in comparison to the number of coins in.

5) The next screen shows the game currently being played. CURRENT GAME DISPLAY will appear at the top of the screen.

6) The last screen provides all of the game statistics for the game previously played. LAST GAME DISPLAY will appear at the top of the screen.

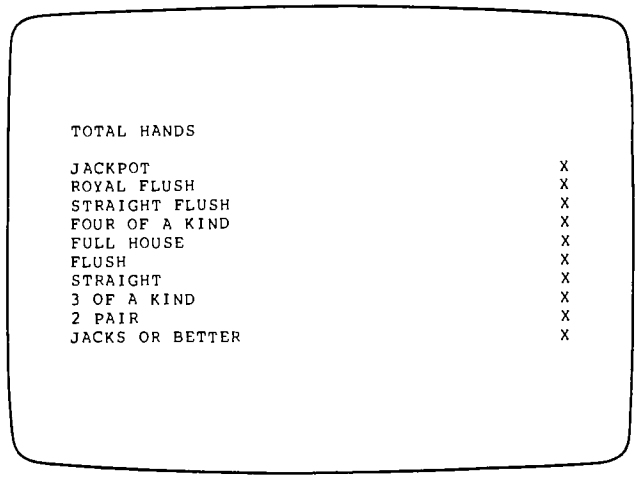


Figure 4-5

Total Hands Data Draw Poker

Turn the key switch one more time to exit the Statistical Display mode.

SELF TEST MODE

The Self Test mode allows the functional checkout of the video and sound outputs, as well as both the input and output ports of the Interface board. The Self Test mode is entered by pressing the Self Test switch. See Figure 4-1. Repeatedly pressing the Self Test switch will access all tests.

INPUT TEST

Press the Self Test switch once to reach the Input Display. See Figure 4-6.

Activating any of the input switches on the front panel will change the corresponding logic level (Ø or 1) state. All the switches are functions of the interface circuits, therefore this checks out all INPUTS to the Interface board.

If any of the logic levels are in

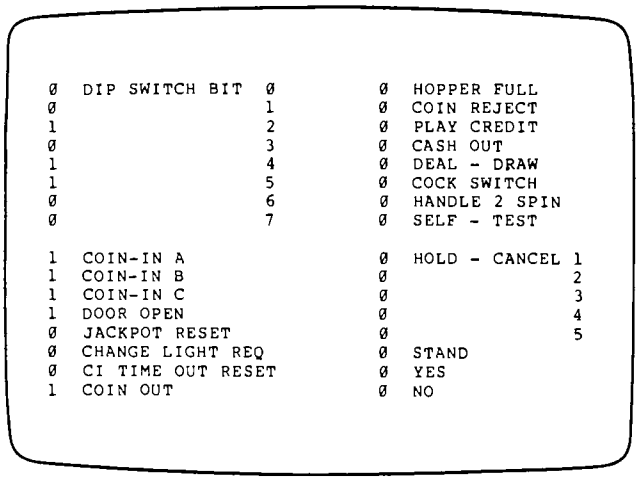


Figure 4-6

Self Test Inputs
Draw Poker

the ON or OFF (1 or Ø) state when it is NOT appropriate, the INPUTS to the Interface board are not functioning properly. Refer to the IGT 8Ø51 Tester Manual on input troubleshooting, or contact IGT Customer Services.

OUTPUT TEST

The second Self Test screen is the Output Display. See Figure 4-7.

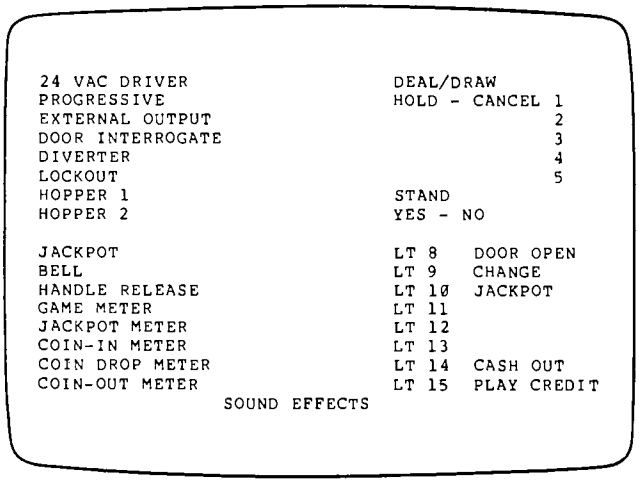


Figure 4-7

Self Test Outputs
Draw Poker

An arrow will be displayed pointing to the first line of the display, which reads 24 VAC DRIVER. By pressing the Cursor Advance switch, the arrow can be moved to any line on the display. See Figure 4-1. By turning the Statistical Display key switch the output displayed on this line will be activated.

NOTE

Holding down the Cursor Advance switch will automatically advance the arrow.

EXAMPLE

Press the Cursor Advance switch until the arrow points to DIVERTER. Turn the Statistical Display key switch and the diverter will be activated. This shows that the Interface board OUTPUT for the diverter to the system is correct.

By using this test, all of the OUTPUT ports on the Interface board can be checked.

If any OUTPUT function does not work properly, refer to the IGT 8Ø51 Tester Manual on output troubleshooting, or contact IGT Customer Services.

VIDEO TEST

The video tests are also reached by using the Self Test switch. There are six video test screens. Each time the Self Test switch is pressed while in the video test mode, the sequence will advance as follows:

FOR PURITY ADJUSTMENT:

1) Red Screen
2) Green Screen
3) Blue Screen

FOR CONVERGENCE ADJUSTMENT:

4) Dot Pattern

5) Cross-Hatch Pattern

6) The sixth screen displays the color groups and color attributes available in the program.

Refer to Section V if monitor adjustment is needed. If any video problems occur, refer to the IGT 8051 Tester Manual on video troubleshooting, or contact IGT Customer Services.

SOUND TEST

The Vocal Effects Module Test Program (VEMTST) is designed to aid in the functional checkout of the Vocal Effects Module. Table 4-1 provides a list of Hex commands versus functions for the VEMTST program.

The procedures for testing the Vocal Effects Module are as follows:

1) Press the Self Test switch until SOUND TEST CODE 00 appears on the screen. To change the SOUND TEST CODE, proceed as follows:

A) Turn the Statistical Display key switch to advance the SOUND TEST CODE 00 by one. (Example: From 00 to 01.)

B) Press the Cursor Advance switch to advance the SOUND TEST CODE 00 by ten. (Example: From 00 to 10.)

C) Press the Self Test switch to activate the test.

NOTE

To EXIT the Vocal Effects Test mode, return the SOUND TEST CODE to 00.

If any test should fail, refer to the IGT 8051 Tester Manual on the Vocal Effects Module, or contact IGT Customer Services.

Press the Self Test switch one more time to exit the Self Test mode.

OPERATIONAL TESTS - SLOT

Proceed with the functional checkout as follows:

1) Turn the main power ON and allow the machine to warm up. See Figure 4-1.

IDLE MODE GRAPHICS

The Idle mode program is activated when the game is not being played.

1) When the game is in the Idle mode, the screen will display the following moving messages: PLAY 1 TO 3 COINS and INSERT COIN.

2) If the screen is blank or if the the Idle mode messages are NOT moving, refer to the IGT 8051 Tester Manual on video troubleshooting, or contact IGT Customer Services.

3) If any of the following error messages appear, refer to the IGT 8051 Tester Manual on video troubleshooting, or contact IGT Customer Services.

A) BAD RAM

B) BAD EPROM

C) BAD MASK ROM

STATISTICAL DISPLAY MODE

The Statistical Display mode is activated by turning the Statistical Display key switch. See Figure 4-2.

ØØH = Exit Test Environment.
Ø1H = Playback Any and All Personalized Messages.
Ø2H = Playback Any and All Dated Messages.
Ø3H = Playback All of Memory Sequentially.
Ø4H = Playback All Vocals.
Ø5H = Playback All Effects.
Ø6H = Playback All Test Tones.
Ø7H = Playback All Music Selections.

1ØH Thru 1FH = Playback Specific Vocal.
2ØH Thru 2FH = Playback Specific Effect.

3ØH = Playback Program Memory Chip Ø (PMØ).
31H = Playback Program Memory Chip 1 (PM1).
32H = Playback Program Memory Chip 2 (PM2).
33H = Playback Program Memory Chip 3 (PM3).
34H = Playback Program Memory Chip 4 (PM4).
35H = Playback Program Memory Chip 5 (PM5).
36H = Playback Program Memory Chip 6 (PM6).
37H = Playback Program Memory Chip 7 (PM7).
38H = Playback Data Memory Chip Ø (DMØ).
39H = Playback Data Memory Chip 1 (DM1).
3AH = Playback Data Memory Chip 2 (DM2).
3BH = Playback Data Memory Chip 3 (DM3).
3CH = Playback Data Memory Chip 4 (DM4).
3DH = Playback Data Memory Chip 5 (DM5).
3EH = Playback Data Memory Chip 6 (DM6).
3FH = Playback Data Memory Chip 7 (DM7).

4ØH = 32 Hz Test Tone.
41H = 64 Hz Test Tone.
42H = 125 Hz Test Tone.
43H = 25Ø Hz Test Tone.
44H = 5ØØ Hz Test Tone.
45H = 1 KHz Test Tone.
46H = 2 KHz Test Tone.
47H = 4 KHz Test Tone.
48H = 8 KHz Test Tone.

5ØH Thru 5FH = Playback Specific Musical Selection.

Table 4-1

VEM Test Commands

The Statistical Display mode provides a sequence of information screens. By repeatedly turning the Statistical Display key switch, all information screens can be accessed. The following describes the information provided by each screen.

NOTE

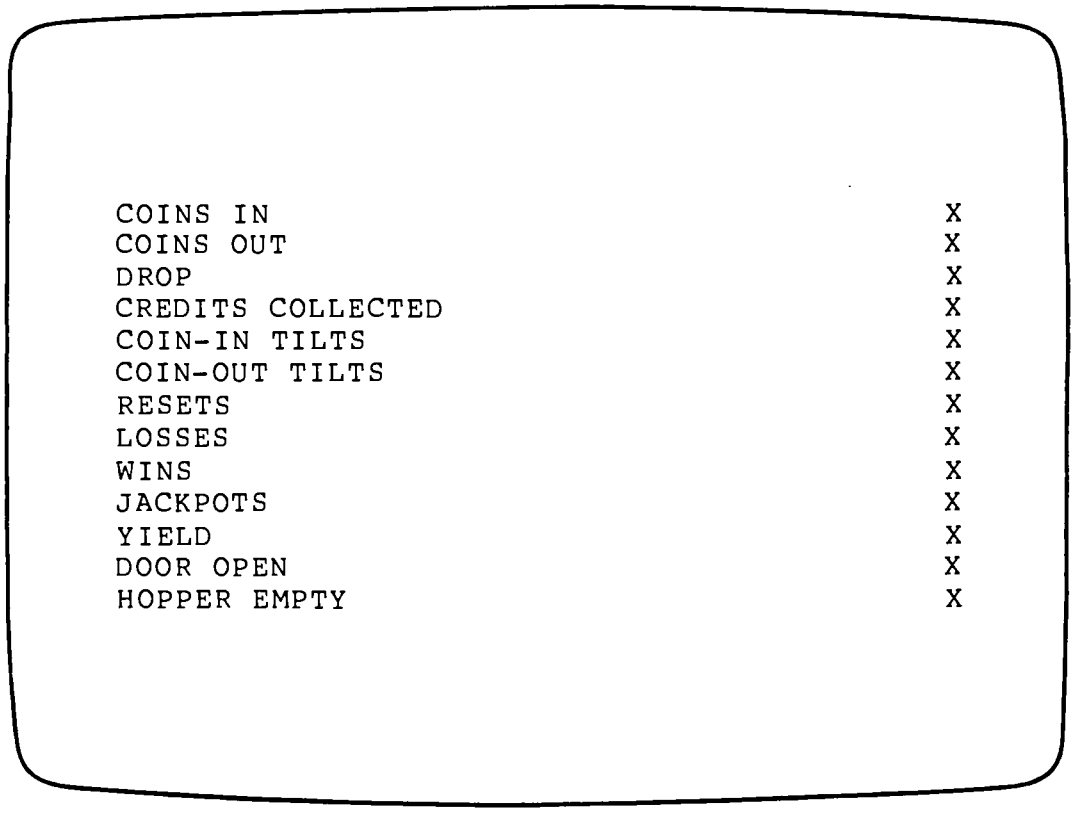
The RAM meter data will indicate ZERO after the CMOS RAM has been RESET. See Section II for RAM reset instructions.

1) The first screen displays data on the game statistics (RAM meter data). See Figure 4-8.

2) The next screen provides coin-in information for the number of coins played. See Figure 4-9.

3) The last screen provides all of the statistics for the game previously played. LAST GAME DISPLAY will appear at the top of the screen.

Turn the key switch one more time to exit the Statistical Display mode.



COINS IN	X	Accumulated Total of Coins In
COINS OUT	X	Accumulated Total of Coins Out
DROP	X	Accumulated Total of Coins Dropped in Box
CREDITS COLLECTED	X	Credits Paid by Attendant
COIN-IN TILTS	X	Number of Coins In Jammed
COIN-OUT TILTS	X	Number of Coins Out Jammed
RESETS	X	Number of Hardware RESETS or Power Down
LOSSES	X	Total Games Played, NO pay
WINS	X	Accumulated Total of Wins
JACKPOTS	X	Accumulated Hand Paid Total
YIELD	X	YIELD = COIN IN - COIN OUT - JACKPOT
DOOR OPEN	X	Number of Times Door is Opened
HOPPER EMPTY	X	Number of Times Hopper is Empty

Figure 4-8

RAM Meter Data
Slot

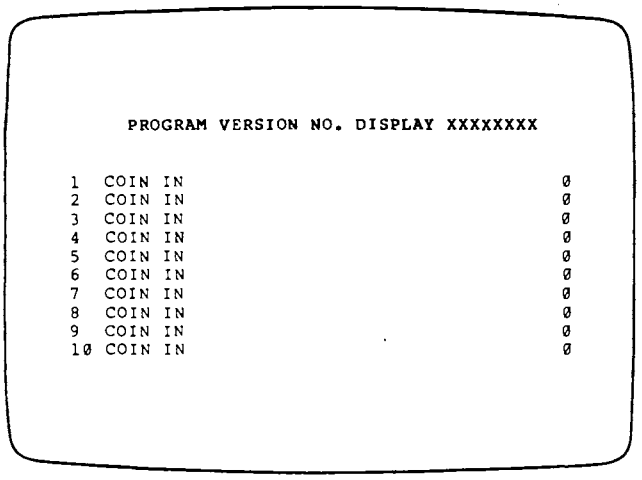


Figure 4-9

Games Played by Coins In Slot

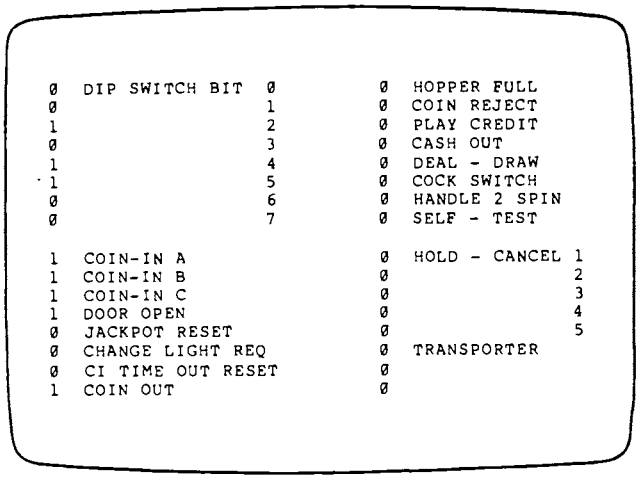


Figure 4-10

Self Test Inputs Slots

SELF TEST MODE

The Self Test mode allows the functional checkout of the video and sound outputs, as well as both the input and output ports of the Interface board. The Self Test mode is entered by pressing the Self Test switch. See Figure 4-1. Repeatedly pressing the Self Test switch will access all tests.

INPUT TEST

Press the Self Test switch once to reach the Input Display. See Figure 4-10.

Activating any of the input switches on the front panel changes the corresponding logic level (0 or 1) state. All the switches are functions of the interface circuits, therefore this checks out all INPUTS to the Interface board.

If any of the logic levels are in the ON or OFF (1 or 0) state when it is NOT appropriate, the INPUTS to the Interface board are not functioning properly. Refer to the IGT 8051 Tester Manual on input troubleshooting, or contact IGT Customer Services.

OUTPUT TEST

The second Self Test screen is the Output Display. See Figure 4-11.

An arrow will be displayed pointing to the first line of the display, which reads 24 VAC

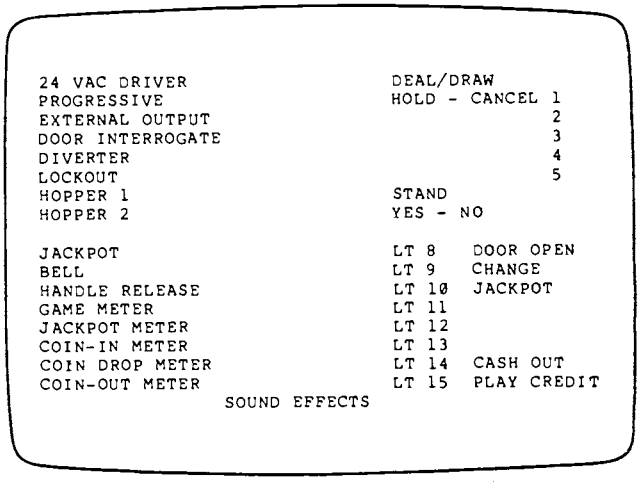


Figure 4-11

Self Test Outputs Slot

DRIVER. By pressing the Cursor Advance switch the arrow can be moved to any line on the display. See Figure 4-1. By turning the Statistical Display key switch the output displayed on this line will be activated.

NOTE

Holding down the Cursor Advance switch will automatically advance the arrow.

EXAMPLE

Press the Cursor Advance switch until the arrow points to DIVERTER. Turn the Statistical Display key switch and the diverter will be activated. This shows that the Interface board OUTPUT for the diverter to the system is correct.

By using this test, all of the output ports to the Interface board can be checked.

If any OUTPUT function does not work properly, refer to the IGT 8051 Tester Manual on output troubleshooting, or contact IGT Customer Services.

VIDEO TEST

The video tests are also reached by using the Self Test switch. There are six video test screens. Each time the Self Test switch is pressed while in the video test mode, the sequence will advance as follows:

FOR PURITY ADJUSTMENT:

1) Red screen

2) Green Screen

3) Blue Screen

FOR CONVERGENCE ADJUSTMENT:

4) Dot Pattern

5) Cross-Hatch Pattern

6) The sixth screen displays the color groups and color attributes available in the program.

Refer to Section V if monitor adjustment is needed. If any video problems occur, refer to the IGT 8051 Tester Manual on video troubleshooting, or contact IGT Customer Services.

SOUND TEST

The Vocal Effects Module Test Program (VEMTST) is designed to aid in the functional checkout of the Vocal Effects Module. Table 4-1 provides a list of Hex commands versus functions for the VEMTST program.

The procedures for testing the Vocal Effects Module are as follows:

1) Press the Self Test switch until SOUND TEST CODE ØØ appears on the screen. To change the SOUND TEST CODE ØØ, proceed as follows:

A) Turn the Statistical Display key switch to advance the SOUND TEST CODE ØØ by one. (Example: From ØØ to Ø1.)

B) Press the Cursor Advance switch to advance the SOUND TEST CODE ØØ by ten. (Example: From ØØ to 1Ø.)

C) Press the Self Test switch to activate the test.

NOTE

To EXIT the Vocal Effects Module test mode, return the SOUND TEST CODE to 00.

If any test should fail, refer to the IGT 8051 Tester Manual on the Vocal Effects Module, or contact IGT Customer Services.

SELF TEST REEL STRIPS

The Self Test reel strips follow the sound test. SELF TEST REEL STRIPS will appear at the top of the screen. Pull the handle down to shift all four reels by one line.

Press the Self Test switch one more time to exit the Self Test mode.

TILT CONDITIONS AND RESET

The following describes the various tilt conditions that may occur during game operation and how to reset the game.

The following tilts indicate a problem with the play of the game. When these problems are detected, a message will appear until the tilt is cleared.

1) COIN OUT TIME OUT

This indicates that a coin has been under the hopper roller too long (over 500 msec.) or that a coin is jammed in the hopper.

2) HOPPER EMPTY

This means that it has been too long (over 8 sec.) since a coin was dropped during a pay, or that the hopper is empty.

3) HOPPER MALFUNCTION

This tilt occurs when the momentum of the hopper pays an extra coin as it is turning off after a pay. It could also mean a cheater or a runaway hopper.

4) COIN IN TIME OUT

This indicates that either a coin is jammed in the coin acceptor or that coin stringing has been attempted.

If a problem occurs due to any of the conditions mentioned above, the game will lock out until the condition has been corrected and the game has been reset.

All tilts are RESET by opening and then closing the door. After the game has been reset, play will resume at the stage prior to the tilt condition.

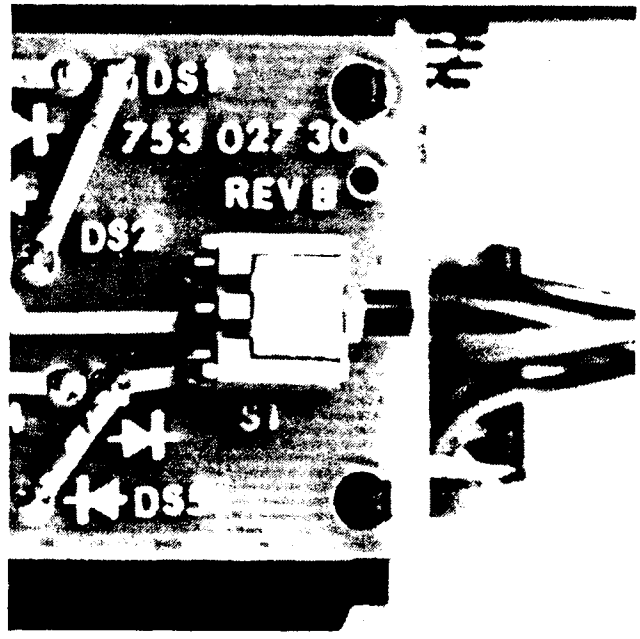


Figure 4-12
Coin-In Button

DOOR OPEN DISPLAY

When the machine door is opened, the message DOOR OPEN appears on the screen. When the door is opened, the game can be played by inserting coins, or by pressing the Coin-In button. See Figure 4-12. The mechanical meters and RAM meters will NOT record in this mode.

DIP SWITCH

The DIP switch is located on the Mother board and is used to control program functions such as denomination, voice option and paytable option. See Figure 4-13.

Refer to Table 4-2 for the DIP switch setting options for Draw Poker and Table 4-3 for the DIP switch setting options for Slot.

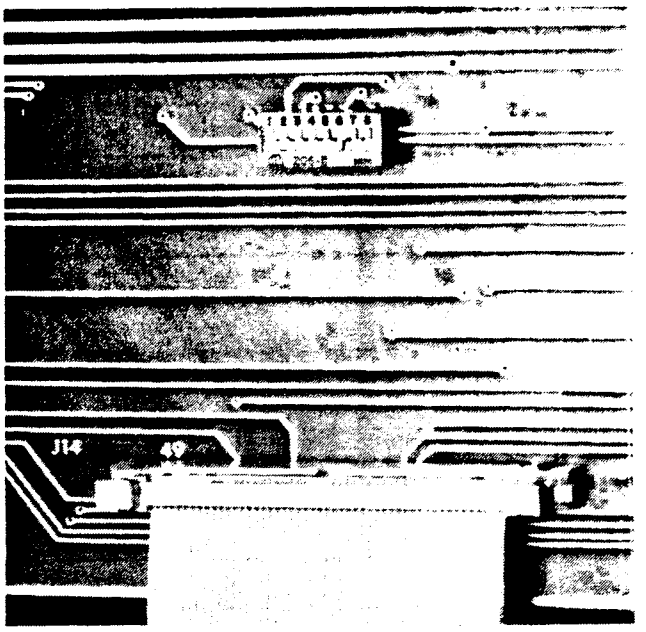


Figure 4-13
DIP Switch

BIT	7	6	5	4	3	2	1	Ø	OPTIONS
	X	X	X	X	X	ON	ON	ON	5¢
	X	X	X	X	X	ON	ON	OFF	10¢
	X	X	X	X	X	ON	OFF	ON	25¢
	X	X	X	X	X	ON	OFF	OFF	50¢
	X	X	X	X	X	OFF	ON	ON	$1
	X	X	X	X	X	OFF	ON	OFF	NO DENOMINATION DISPLAYED
	X	X	X	X	X	OFF	OFF	ON	20¢
	X	X	X	X	X	OFF	OFF	OFF	NO DENOMINATION DISPLAYED
	X	X	X	X	ON	X	X	X	VOICE OUTPUT
	X	X	X	X	OFF	X	X	X	NO VOICE OUTPUT
	X	X	X	ON	X	X	X	X	NORMAL SCREEN
	X	X	X	OFF	X	X	X	X	INVERTED SCREEN
	ON	ON	ON	X	X	X	X	X	PAYTABLE A
	ON	ON	OFF	X	X	X	X	X	PAYTABLE B
	ON	OFF	ON	X	X	X	X	X	PAYTABLE C
	ON	OFF	OFF	X	X	X	X	X	PAYTABLE D
	OFF	ON	ON	X	X	X	X	X	PAYTABLE E
	OFF	ON	OFF	X	X	X	X	X	PAYTABLE F
	OFF	OFF	ON	X	X	X	X	X	PAYTABLE G
	OFF	OFF	OFF	X	X	X	X	X	PAYTABLE H

NOTE: X = DON'T CARE
ON = Ø (CLOSED)
OFF = 1 (OPEN)

Table 4-2

DIP Switch Options
Draw Poker

BIT	7	6	5	4	3	2	1	Ø	OPTIONS
	X	X	X	X	X	ON	ON	ON	5¢
	X	X	X	X	X	ON	ON	OFF	10¢
	X	X	X	X	X	ON	OFF	ON	25¢
	X	X	X	X	X	ON	OFF	OFF	50¢
	X	X	X	X	X	OFF	ON	ON	$1
	X	X	X	X	X	OFF	ON	OFF	NO DENOMINATION DISPLAYED
	X	X	X	X	X	OFF	OFF	ON	20¢
	X	X	X	X	X	OFF	OFF	OFF	NO DENOMINATION DISPLAYED
	X	X	X	X	ON	X	X	X	VOICE OUTPUT
	X	X	X	X	OFF	X	X	X	NO VOICE OUTPUT
	X	X	X	ON	X	X	X	X	NORMAL SCREEN
	X	X	X	OFF	X	X	X	X	INVERTED SCREEN
	X	X	ON	X	X	X	X	X	AUTOMATIC SPIN WITH MAX BET
	X	X	OFF	X	X	X	X	X	PULL HANDLE TO SPIN

NOTE: X = DON'T CARE
ON = Ø (CLOSED)
OFF = 1 (OPEN)

Table 4-3

DIP Switch Options
Slot

Section V

SECTION V
FIELD SERVICE AND MAINTENANCE

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List of Illustrations

Table of Contents (Cont.)

List of Illustrations (Cont.)

Wiring Diagrams

SECTION V
FIELD SERVICE AND MAINTENANCE

INTRODUCTION

The following information is provided to aid in the servicing and maintenance of the Fortune II machine. Included are monitor adjustment procedures, installation and troubleshooting instructions for the IGT slot handle, denomination change procedures, a detailed description of the adjustment procedures for the hopper, and removal and replacement procedures for various machine components.

For a complete discussion on the circuit boards and electronics of this system, refer to the IGT 8051 Tester Manual or contact IGT Customer Services.

BLOCK DIAGRAM - FORTUNE II MACHINE

The overall block diagram of the Fortune II machine is shown in Figure 5-1. A general description of each board is as follows:

The Microprocessor board contains the game processor and the video processor 8051 chips. These chips are the central elements in the system. All the input and output function data for the game operations are implemented by encoding proper sequences of instructions or game programs in the memory section.

The data and certain types of programs are stored in Random Access Memory (RAM) while the game programs are stored in Read Only Memory (ROM) circuitry. The Microprocessor performs all the system functions by fetching the instructions in the memory, processing them and communicating the results via the system input and output ports and the display monitor.

The Interface board provides the interface circuitry to connect the input and output to the Microprocessor. The output ports permit the Central Processing Unit (CPU) to communicate the results of its processing to the external devices. The input ports enable the CPU to receive information from external sources.

The vocal effects programs, such as the digitized speech and sound effects, are contained in the Vocal Effects Module. The vocal processor also uses an 8051 chip. Its associated vocal memory, digital-to-analog converter, and the audio amplifier electronic circuitry, provide the sound effects of the system.

The Tone Generator Module provides a wide range of music and sound effects for the system. The sound generators are all under software control. The memory contains the instructions for the CPU for each application's sound or music requirements.

BASIC TROUBLESHOOTING INFORMATION

The following procedures are commonly applied to isolate a suspected circuit board of malfunction from other devices in the machine.

1) Substitute a like unit known to be in good working order.

2) Check the condition of all harnessing and securing of all wires, as well as the individual contacts of mating

connector to the circuit board.

3) Check all switches for proper operation.

4) Check the supply voltage to make sure it is within specified limits.

If a circuit board proves to be faulty, replace it and return it to IGT.

RECOMMENDED TEST EQUIPMENT

It is recommended that the IGT 8051 Tester be used to troubleshoot the electronic system of the Fortune II machine.

PRINTED CIRCUIT BOARDS REMOVAL/-REPLACEMENT

The circuit boards are located inside the card cage. The upper tray holds the Microprocessor board and the lower tray holds the Vocal Effects Module or the Tone Generator Module, and the Interface board.

CAUTION

Handle all circuit boards with care to avoid possible damage to components, the board and edge connectors.

To REMOVE a circuit board from the card cage, proceed as follows:

1) Turn the main power to the machine off and then unlock and open the card cage.

2) Firmly grasp the middle of the metal tray and pull the assembly straight out.

To REPLACE a circuit board assembly, proceed as follows:

1) Determine the location of the circuit board and align the tray with the guides on both sides of the card cage.

2) Push the circuit board back into the card cage until it is fully connected to the Mother board.

4) Close and lock the card cage.

HOPPER REMOVAL/REPLACEMENT

To REMOVE the hopper, proceed as follows:

1) Grasp the hopper handle and pull straight out.

To REPLACE the hopper, proceed as follows:

1) Align the hopper base with the metal guides and slide the hopper back in.

NOTE

Make sure that the hopper is firmly connected to the main harness at the rear of the machine.

HOPPER ADJUSTMENTS

The following adjustment procedures refer to the side eject type hopper.

TOP PINWHEEL BEARING (PIN TYPE)

1) Be sure that the vee edge on the pinwheel is in the groove of the bottom two pinwheel bearings.

2) Tighten the top bearing set screw with a 3/32" allen wrench, making sure that the pinwheel vee edge fits into the bearing above. Back off the set screw 1/4 turn after

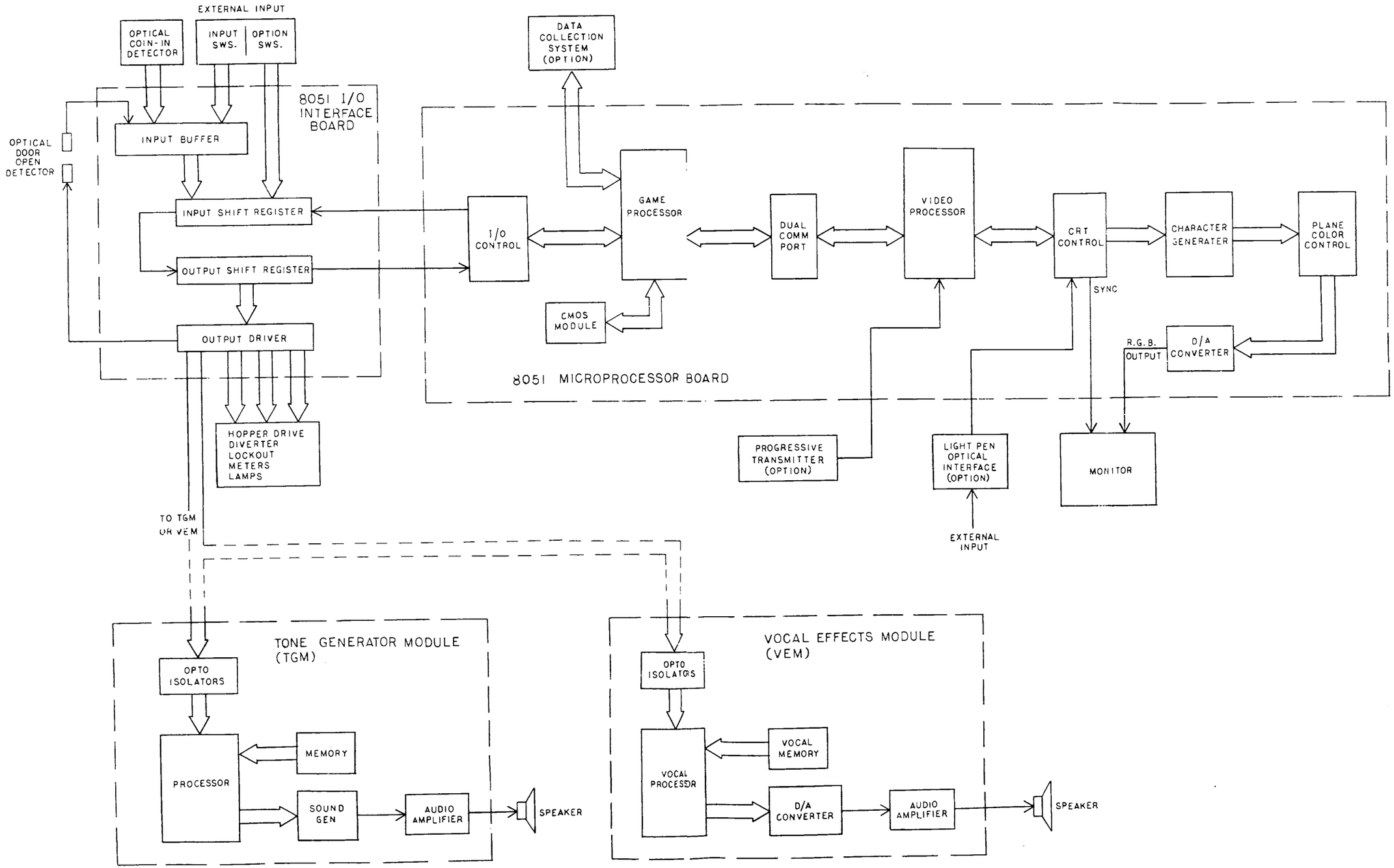


Figure 5-1
Block Diagram - Fortune II Machine

tightening. Depress the motor brake and rotate the pinwheel to check for smooth operation.

3) If it is necessary to space the pinwheel surface out to be flush with the wheel housing casting surface, use a shim. Place this shim on the pin between the top bearing and the wheel housing casting as required.

TOP PINWHEEL BEARING (ECCENTRIC TYPE)

1) Be sure that the vee edge on the pinwheel is in the groove of the bottom two pinwheel bearings.

2) Snug the top bearing set screw with a 3/32" allen wrench so that the eccentric can be turned with a flat bladed screwdriver.

3) Turn the eccentric counterclockwise, making sure that the pinwheel vee edge fits into the bearing groove.

4) While holding the bearing snugly against the pinwheel with a flat bladed screwdriver, tighten the set screw. Depress the motor brake and rotate the pinwheel to check for smooth operation.

5) If it is necessary to bring the pinwheel surface out to be flush with the wheel housing casting surface, push the eccentric toward you. Tighten in the desired position.

BOWL ECCENTRIC

1) Loosen the screw holding the bowl eccentric located on the right side of the hopper bowl flange with a Phillips screwdriver.

2) Rotate the eccentric with a 7/16" open end wrench until there is an even, minimum clearance between the hopper bowl and the edge of the pinwheel.

3) Holding the eccentric in place with the wrench, tighten the retaining screw.

KNIFE ADJUSTMENT

1) Loosen knife retaining screws with a Phillips screwdriver.

2) Depress the motor brake and rotate the pinwheel to find the high point on the shelf wheel, if any. Adjust to this point.

3) Hold knife blade assembly to the top of the shelf wheel.

4) Knife may need to be bent inward (toward the pinwheel) so that the knife tip is flat against the pinwheel.

5) Tighten knife retaining screws.

COIN WIPER

1) Loosen the coin wiper retaining screws with a Phillips screwdriver.

2) Place a coin on the shelf wheel under the tip of the coin wiper.

3) Position the tip of the coin wiper to just touch the edge of the coin.

4) Tighten retaining screws, using care not to change the position of the coin wiper.

BOWL WEIGHT SWITCH

1) Fill hopper bowl with desired number of coins.

2) Turn the set screw, centered under the hopper bowl, clockwise with a 3/16" allen wrench until the micro switch plunger is in the up position. See Figure 5-2.

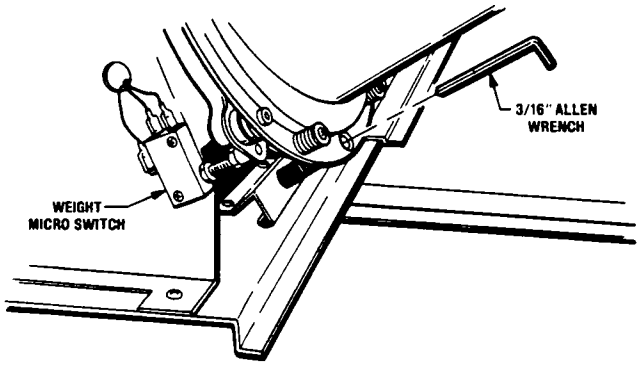


Figure 5-2
Hopper Bowl Weight Switch

3) Adjust the switch activating screw (attached to the wheel housing casting) by loosening the 3/8" jam nut and turning the screw head with a 5/16" wrench until there is no clearance between it and the micro switch plunger. Tighten the jam nut while holding the screw head in position.

4) Back off the set screw, centered under the hopper bowl, counterclockwise very gradually until the micro switch clicks into the down position. The hopper is now set at the desired capacity.

COIN COUNTING SWITCH

1) As the coin passes under the coin counting roller on 50¢ and dollar hoppers, the switch should click on at the 11:00 position and click off at the 1:00 position. On 50¢, 10¢ and 25¢ hoppers, the switch should click on at the 10:00 position and click off at the 2:00 position.

2) Hold the nylon screw which activates the coin counting switch with a screwdriver and loosen the jam nut with a 5/16" open end wrench.

3) Turning the nylon screw clockwise will activate the switch sooner and deactivate it later, providing a longer sweep over the coin. Turning the screw counterclockwise will activate the switch later and deactivate it sooner, providing a shorter sweep over the coin. Additional adjustment can be obtained by gently bending the micro switch arm in the appropriate direction.

4) Hold the screw in place with a screwdriver and tighten the jam nut with the wrench.

MONITOR ASSEMBLY REMOVAL/REPLACEMENT

CAUTION

Use extreme care when removing or replacing the monitor.

To REMOVE the monitor assembly, proceed as follows:

1) Disconnect the monitor harness.

To REPLACE the monitor assembly, proceed as follows:

1) Align the monitor assembly with the metal guides and slide the monitor back securely in place.

2) Reconnect the monitor harness.

DANGER

HIGH VOLTAGE exists in any monitor even when the **POWER IS DISCONNECTED.** DO NOT touch electrical parts of the CRT yoke with your hands or with metal objects in your hands.

CAUTION

Use only one hand when working on any monitor while the **POWER IS ON OR CONNECTED.**

RGB MONITOR ADJUSTMENTS

Refer to Figure 5-3 for the location of the adjustment pots on the RGB monitor.

Figure 5-3

RGB Monitor Adjustments

COLOR ADJUSTMENTS

The color adjustments are made with the three pots on the top right hand side of the monitor.

1) Put the MODE switch in the SET UP position. A thin line will appear across the center of the screen.

2) Turn the three color control pots (red, green and blue) fully counterclockwise until NO LINE appears on the monitor.

3) Increase the RED by turning the RED control pot clockwise until a RED LINE is just visible on the monitor.

4) Increase the GREEN by turning the GREEN control pot clockwise until the RED LINE on the monitor turns YELLOW.

5) Increase the BLUE by turning the BLUE control pot clockwise until the YELLOW LINE turns WHITE.

6) Return the MODE switch to the NORMAL position.

NOTE

If one of the colors produces a separate line ABOVE or BELOW the RED line, the monitor needs convergence adjustment. Contact IGT Customer Services and DO NOT attempt to make any further test or adjustment.

COLOR GAIN

The COLOR GAIN control is the pot located to the left of the MODE switch and is for MINOR adjustments only.

Clockwise adjustment will INCREASE the video brightness, while counterclockwise adjustment will DECREASE the video brightness.

HORIZONTAL ADJUSTMENT

The horizontal alignment can be adjusted by turning the pot located to the LEFT of the MODE switch.

Clockwise adjustment will shift the picture to the LEFT of the screen, while counterclockwise adjustment will shift the picture to the RIGHT.

VERTICAL SIZE AND LINEARITY

The vertical size and linearity are the two pots located to the EXTREME LEFT of the MODE switch.

The left hand pot controls the vertical size of the picture. Clockwise adjustment of this pot will ENLARGE the size of the picture, while counterclockwise adjustment will cause the picture to SHRINK.

The right hand pot controls the vertical height or linearity of the picture (top to bottom video alignment). Clockwise adjustment of this pot will shift the picture toward the BOTTOM of the screen, while counterclockwise adjustment will shift the picture UPWARD.

ELECTROHOME MONITOR ADJUSTMENTS

Refer to Figure 5-4 for the location of the adjustment pots on the Electrohome monitor.

HORIZONTAL CENTER

The horizontal centering can be adjusted by turning the thumb wheel pot located to the right of the color controls.

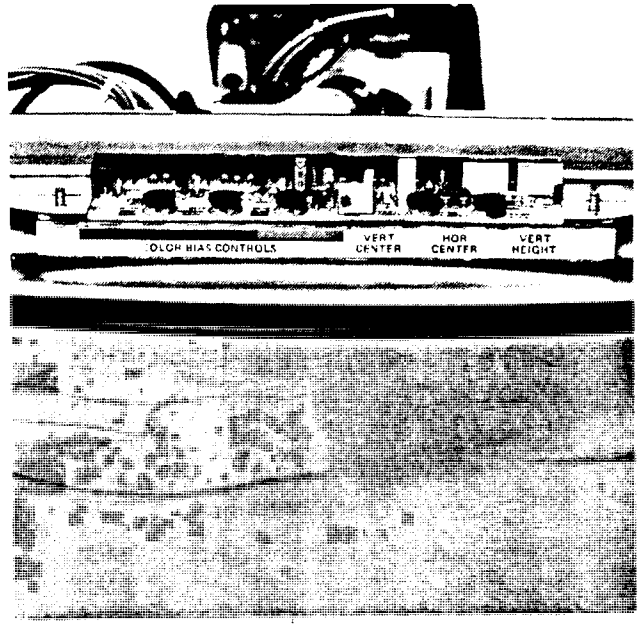


Figure 5-4

Electrohome Monitor Adjustments

Clockwise adjustment of this pot will shift the picture to the LEFT of the screen, while counterclockwise adjustment will shift the picture to the RIGHT.

VERTICAL CENTER

The vertical center control pot is located to the immediate left of the horizontal center pot. The picture can be vertically centered by adjusting the pot with a small screwdriver.

Clockwise adjustment of this pot will shift the picture UPWARD, while counterclockwise adjustment will shift the picture toward the BOTTOM of the screen.

VERTICAL SIZE

The vertical size control pot is located to the right of all the controls and adjusts the vertical size of the picture.

Clockwise adjustment of this pot will ENLARGE the size of the

picture, while counterclockwise adjustment will cause the picture to SHRINK.

IGT SLOT HANDLE INSTALLATION INSTRUCTIONS

The following installation instructions are for the IGT slot handle single switch model and the two switch/lockout model. See the assembly drawing and corresponding parts list in Section VI, Replaceable Mechanical Parts.

To install the single switch and the two switch/lockout, proceed as follows:

1) Turn the main power to the machine OFF.

2) To prevent parts from entering the slot stand, stuff a shop rag into the coin overflow bin.

3) Fit the base plate assembly inside the machine and line up the mounting holes. Make sure there are no obstructions preventing a flush mount.

4) Insert bearing and retaining ring into ring. See Figure 5-5.

5) Place on outside of cabinet and insert the three carriage bolts through the ring and cabinet hole spacers.

6) Install the spring washer over the bearing exposed to the inside of the cabinet.

7) Take the base plate assembly and insert it over the bearing exposed to the cabinet interior. Orient the mounting holes in the base plate to the carriage bolts and secure using three special nuts.

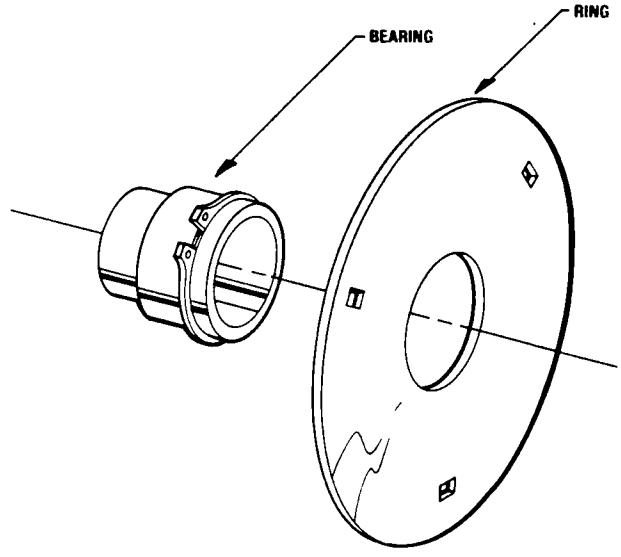


Figure 5-5

Handle Bearing and Ring Assembly

8) Preassemble the screw, ground connector and helical washer, and set aside.

9) Preassembly the action plate assembly, bushing spacer and hammer as illustrated in Figure 5-6, and set aside.

10) Lubricate bearing inside diameter with a fine film of silicon spray lubricant.

11) Insert handle arm assembly through bearing.

12) Install dash pot assembly and retainer on hammer.

13) Install dash pot assembly and retainer on action assembly.

14) Orient the preassembled action plate assembly to the handle arm assembly and the base plate ratchet pawls.

Place spacer and hammer assembly on shaft, and connect dash pots to base plate.

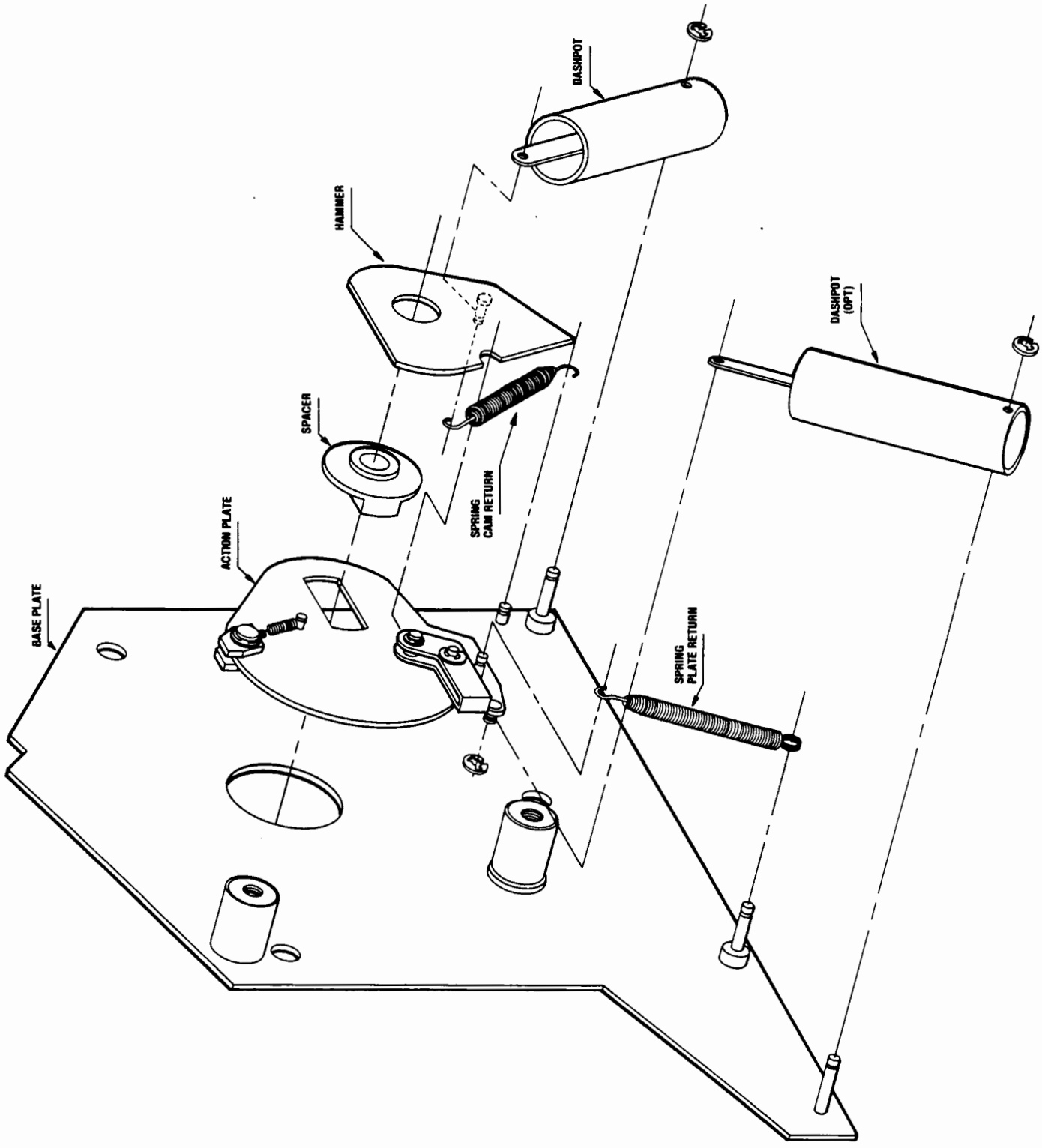


Figure 5-6
Handle Base Plate Assembly

15) Using the screw and washer preassembled in Step 9, place a small amount of thread locking adhesive on the screw and secure the action plate arm hammer plate to the handle subassembly.

16) Install the brace to the base plate assembly with two screws. Check the dash pot assembly by hand making sure it does not bind anywhere through its full travel.

17) Install spring with shrink tube to the action plate post and to the base plate post.

18) Install spring to the hammer post and the base plate post. See Figure 5-6.

19) Lubricate all pivot points including the contact area between the spacer with a fine film of silicon spray lubricant.

20) To adjust the upper microswitch, pull the handle to the "bottom out" position. Rotate the microswitch plate until the switch contacts click. Lock adjustment with the switch adjustment screw and release the handle.

    To adjust the lower microswitch, lift the handle in the upright position and adjust the switch until it closes. Lock adjustment.

NOTE

The lower microswitch is on the two switch version ONLY.

21) Pull the handle through several complete cycles to insure no binding exists.

22) Remove rag from coin overflow bin. Turn on the machine power and test for proper play.

IGT SLOT HANDLE ASSEMBLY TROUBLESHOOTING

This section provides the information necessary to troubleshoot the IGT slot handle assembly. The following describes the possible problems that may occur and the action to be taken.

SWITCHES DO NOT REGISTER

1) Check switch wiring against the wiring diagram.

2) Check switch functions and adjustments. See Slot Handle Installation, Steps 20 and 21.

REEL SPEED IS NOT CHANGING WITH HANDLE PULL SPEED (8051 SYSTEMS ONLY)

If the handle is not fully returning, the upper switch will not activate. If this occurs, check the following:

1) Check for binding in damper and lubricate with silicon spray lubricant.

2) Clogged orifice in the damper. Clean orifice with a 0.020 inch diameter wire.

3) Check for binding in main bearing pin and lubricate with silicon spray lubricant.

If the handle is returning properly, but the reels are still not spinning correctly, proceed as follows:

1) The switches are out of adjustment, or there is an electronic problem. See Slot Handle Installation, Steps 20 and 21.

CAM IS NOT ENGAGING PROPERLY INTO HAMMER

1) Lubricate all moving parts with silicon spray lubricant.

2) Check for binding of roller pin against action plate.

3) Check for burr on end of roller pin.

4) Check for proper orientation of torsion spring.

5) Check for wear on roller. If any wear is visible, replace part.

6) Check for binding of ground connection washer against hammer.

7) Check damper for binding or clogged orifice.

8) Check wear caused by hammer on stop pin of base plate. If excess wear is causing the hammer not to engage with the cam roller, replace entire handle assembly.

COIN HANDLING OPTIONS

The coin handling assembly has been designed to provide the option of adpating to the dollar or nondollar version of operation.

The dollar version refers to all coins larger that the U.S. 50¢ piece (30.7mm) diameter, which use the crossflow type acceptor. This presently includes the dollar, casino dollar equivalent metal tokens, the 40mm tokens for New Jersey and the 45mm $5 tokens.

The nondollar version refers to coins smaller than the U.S. 50¢ piece, which use the straight drop-through type acceptor. This presently includes all U.S. coins 50¢ or smaller, most foreign coins and small tokens.

DENOMINATION CHANGE PROCEDURES

The following general changes are made in accordance with the specified denomination required for proper operation. The components effected are as follows:

SAME COIN VERSION (Dollar to dollar conversion or nondollar to nondollar conversion.)

Coin Head
Encoder Insert
Hopper
DIP Switch Setting

COIN VERSION CHANGE (Dollar to nondollar conversion or nondollar to dollar conversion.)

Coin Entry Assembly
Coin Head
Acceptor/Channel Repositioned
Diverter/Encoder Repositioned
Encoder Insert
Hopper
DIP Switch Setting
Acceptor Alignment
Lower Fluorescent Panel Adjustment
Lockout Coil Repositioned

DOLLAR TO NONDOLLAR/NONDOLLAR TO DOLLAR CONVERSION

COIN ENTRY

To change the coin entry assembly, proceed as follows:

1) Remove the two #6-32 and two #10-24 screws securing the coin head to the belly casting.

2) Remove harness by cutting wire ties and unplug from the breakout board.

3) Install new coin head.

COIN CHANNEL

To remove the coin channel assembly, proceed as follows:

1) Remove acceptor.

2) Change position of encoder/-diverter by removing E-rings and both pivot rods. Remount encoder/diverter to channel using alternate hole in the encoder/diverter. See Figure 5-7 for the dollar version or Figure 5-8 for the nondollar version.

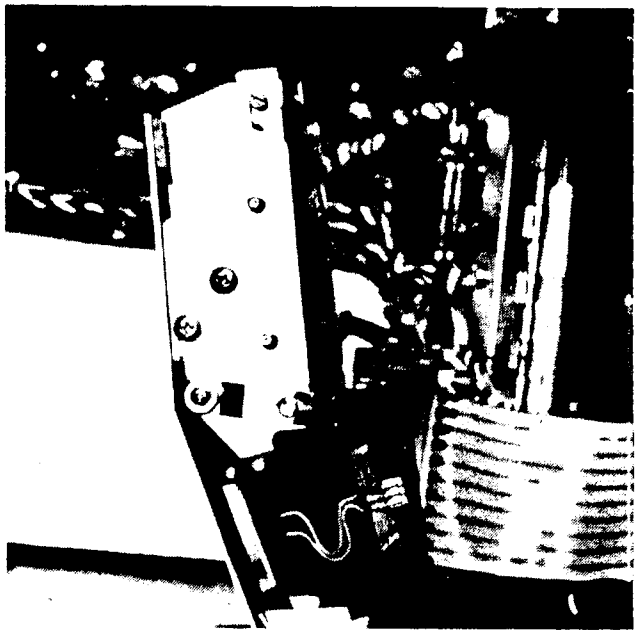


Figure 5-7
Coin Channel - Dollar Version

3) Temporarily remove the circuit board from the encoder and remove the coin guide insert. Replace with one for the new coin denomination and reinstall the circuit board. See Figure 5-9.

4) Mount channel to lower fluorescent panel using appropriate dollar or non-dollar spacer. See Figure 5-7 or Figure 5-8.

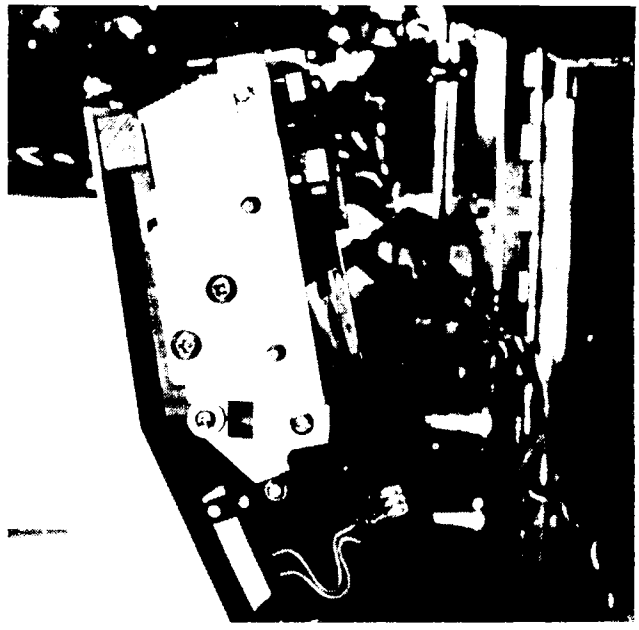


Figure 5-8
Coin Channel - Nondollar Version

5) Turn lockout coil 180° and adjust for proper operation. See Figure 5-10 for the

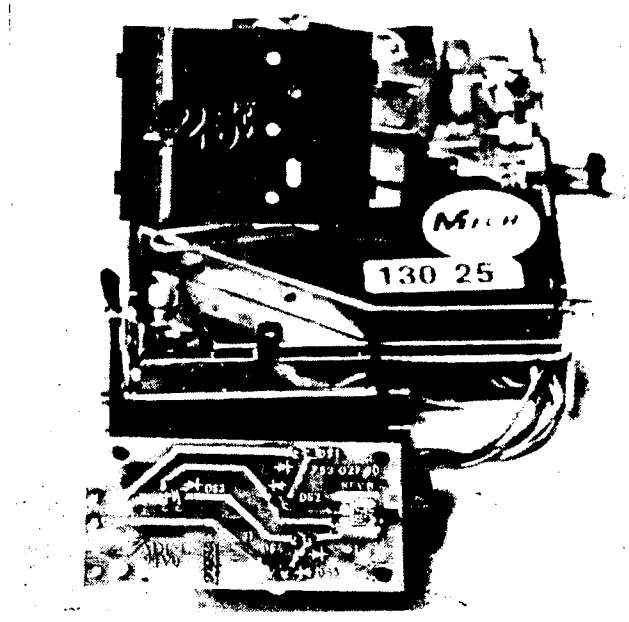


Figure 5-9
Coin Guide Insert

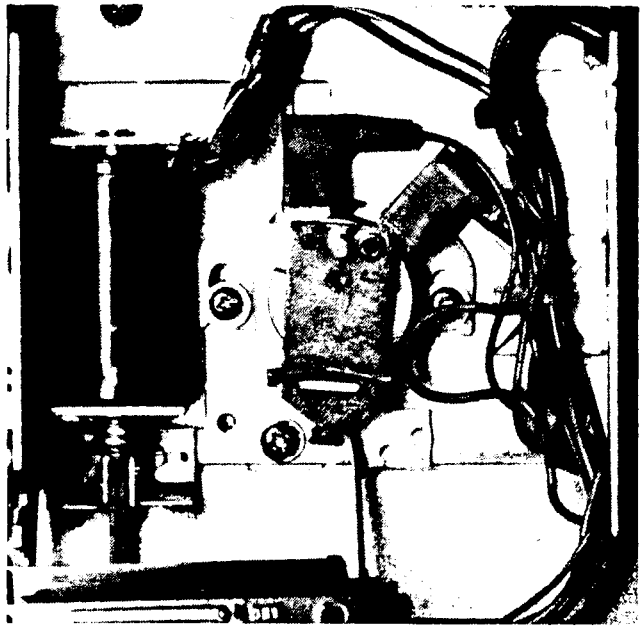


Figure 5-10
Lockout Coil - Dollar Version

dollar version or Figure 5-11 for the nondollar version.

6) Adjust encoder to align in both divert or nondivert modes with chutes. Loosen screws and move soleniod up and down to align the encoder/diverter. See Figure 5-12. Bend STOP if encoder/-diverter alignment is required. See Figure 5-13.

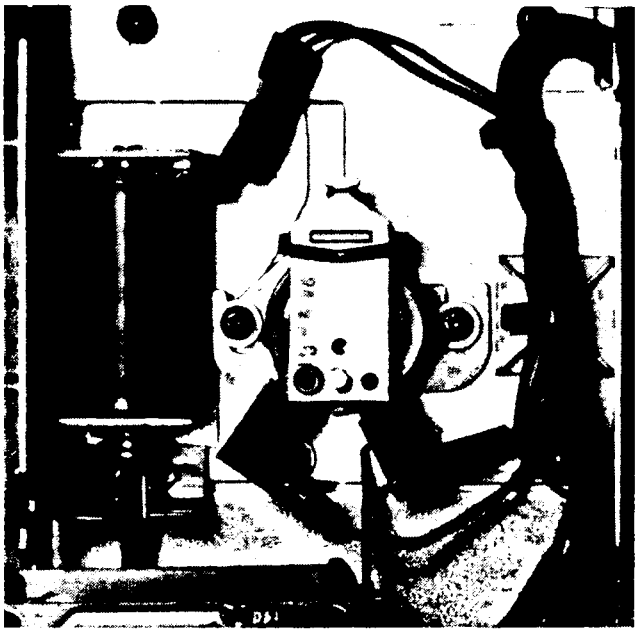


Figure 5-11
Lockout Coil - Nondollar Version

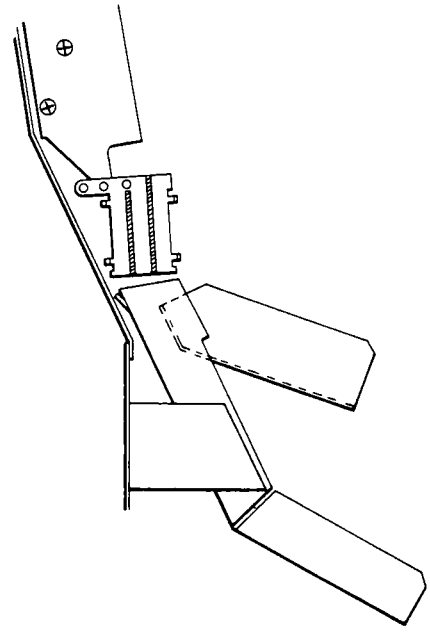


Figure 5-12
Encoder/Diverter Adjustment

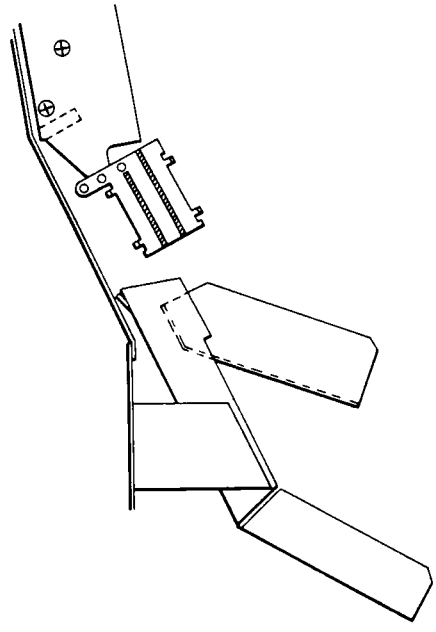


Figure 5-13
Encoder/Diverter Alignment

7) Install appropriate acceptor.

8) Adjust lower fluorescent panel vertically so that the panel fits on the stud properly. See Figure 5-14.

9) Adjust lower fluorescent panel in and out using stud until coin acceptor and coin head align. See Figure 5-14.

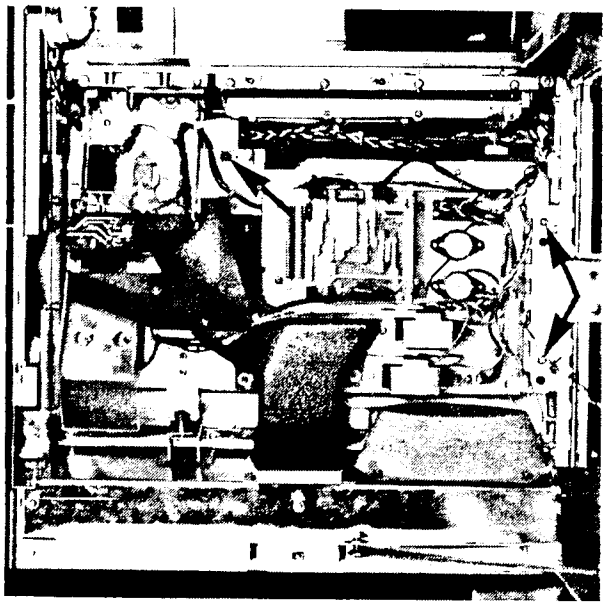


Figure 5-14

Fluorescent Panel Adjustment

SAME COIN VERSION - COIN GUIDE INSERT

To change the coin guide insert, proceed as follows:

1) Temporarily remove the circuit board from the encoder. See Figure 5-9.

2) Remove the coin guide insert and replace with the required new one, or reposition it as the case may be to accommodate the new denomination.

3) Replace the encoder circuit board.

NOTE

Install coin guide insert so that the correct denomination imprinted on the insert is visible and readable.

DIP SWITCH

Change the DIP switch settings. Refer to Section IV, Table 4-2 (Draw Poker) or Table 4-3 (Slot) for denomination options.

COIN ACCEPTOR ADJUSTMENTS

Coin acceptors pass coins of the proper denomination to the coin counting devices and return undesired or counterfit coins. The following are adjustments for the quarter and nickel coin acceptors.

UNDERSIZE LEVER ADJUSTMENT - QUARTER ACCEPTOR

Bending the tab on the top end of the undersize lever adjusts the lever to select the minimum diameter coin that will unlock the cradle. This adjustment is critical and can be made to trap coins only slightly smaller than a quarter.

DIAMETER GAUGE ADJUSTMENT -NICKEL ACCEPTOR

The diameter gauge determines the maximum diameter of the coin to be accepted. To adjust the diameter gauge, proceed as follows:

1) Loosen the mounting screw and position the gauge to the extreme right of the adjustment range.

2) Place a coin on the input port of the acceptor.

3) Move the diameter gauge to the left until the coin drops into the acceptor. Tighten the mounting screw.

KICKER ADJUSTMENT - QUARTER AND NICKEL ACCEPTORS

The kicker adjustment is governed by the weight of the coin.

1) Place the kicker to the extreme left of its adjustment range. All coins will be returned with the kicker in this position.

2) In small steps, move the kicker to the right until all coins are accepted. If the kicker is moved too far to the right, light weight coins or coins made of very low magnetic materials will be accepted.

SEPARATOR ADJUSTMENT - QUARTER ACCEPTOR

The separator adjustment is governed by the weight of the coin.

1) Place the separator to the extreme right of its adjustment range.

2) In small steps, move the separator to the left until all coins are accepted. If the separator is moved too far to the left, light weight coins will be accepted. If the separator is moved too far to the right, heavy coins will be accepted.

MAGNET GATE ADJUSTMENT - QUARTER AND NICKEL ACCEPTORS

The magnet gate blocks coins that are made with a high content of steel or iron and that are too thick. Activating the return lever will free coins trapped by the magnet gate.

To adjust the magnet gate, proceed as follows:

1) Place a coin between the magnet and mainplate and turn the thickness screw counterclockwise until the magnet holds the coin in place.

2) Hold the acceptor upright and turn the thickness screw clockwise until the coin falls free.

3) Turn the thickness screw 1/4 turn to 1/2 turn clockwise. The magnet gate should now be properly adjusted.

NOTE

All coin acceptor adjustments should be made with the bottom of the acceptor held as level as possible.

RETURN LEVER ADJUSTMENT - QUARTER AND NICKEL ACCEPTORS

The return lever adjustment is made with the acceptor installed in the machine.

If the acceptor bracket can be moved vertically, the bracket should be positioned so that when the reject button is pressed, the wiper completely sweeps the area behind the magnet. This prevents ferrous coins from hanging to the bottom of the magnet. If necessary, the return lever can be bent slightly.

COIN ACCEPTOR MECHANISM TROUBLESHOOTING (NONDOLLAR VERSION)

If the coin acceptor mechanism is not accepting coins, proceed as follows:

1) The reject lever is stuck down or the lever spring is broken.

Clear reject lever. Check reject button and adjust or clean lever. If the spring is broken, replace it.

2) Acceptor needs adjusting.

Hold the acceptor level and turn the magnet adjusting screw counterclockwise all the way. Drop a coin in and slowly turn screw clockwise until coin falls through, and then adjust one-half turn more.

If the coin is still rejected, loosen the adjusting slide screw on the back of the acceptor and set the slide on the second notch from the left. Retighten the screw.

3) Cradle worn out.

Replace if cradle is loose.

4) Coins sticking in acceptor.

Acceptor needs adjusting.

Cradle is dirty. Remove cradle and clean spindle.

5) Check for metal filings stuck to the magnet.

CARD CAGE ASSEMBLY REMOVAL/REPLACEMENT

To REMOVE the card cage assembly, proceed as follows:

1) Remove the monitor, open the card cage and remove the circuit boards.

2) Unplug the harness and remove the two #6 Phillips screws on the front of the cage.

6) Pull out the card cage assembly.

Follow the reverse procedure to REPLACE the card cage assembly.

MOTHER BOARD ASSEMBLY REMOVAL/-REPLACEMENT

To REMOVE the Mother board assembly, proceed as follows:

1) Remove the card cage assembly.

2) Disconnect all the harnesses from the Mother board.

5) Remove the #6 Phillips screws on the Mother board.

6) Remove the Mother board.

Follow the reverse procedure to REPLACE the Mother board.

COUNTER ASSEMBLY REMOVAL/REPLACEMENT

To REMOVE the counter assembly, proceed as follows:

1) Disconnect the counter cable.

2) Remove the four #10 Phillips screws and loosen the four #8 hex nuts.

3) Pull out the counter assembly.

Follow the reverse procedure to REPLACE the counter assembly.

POWER TRANSFORMER REMOVAL/-REPLACEMENT

CAUTION

Turn the main power to the machine OFF before removing the power transformer.

To REMOVE the power transformer, proceed as follows:

1) Remove the hopper and disconnect the power line cord.

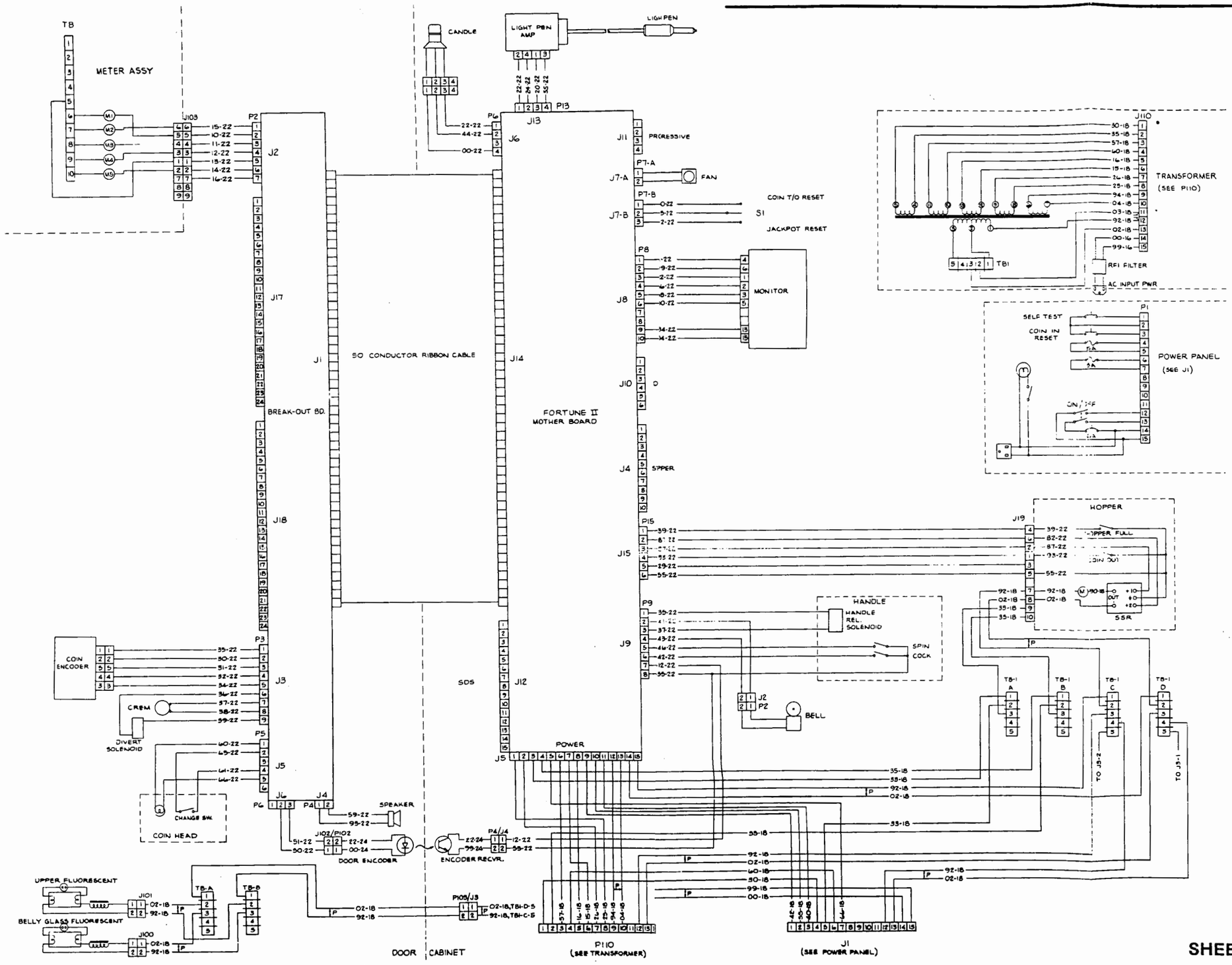
2) Disconnect the main harness.

3) Remove the drop chute.

4) Remove bell.

5) Remove the four #10 Phillips screws on the base of the transformer.

Follow the reverse procedure to REPLACE the power transformer.



WIRING DIAGRAM
FORTUNE II
SHEET 1 OF 1 820 027 00 REV EA

Section VI

SECTION VI
REPLACEABLE MECHANICAL PARTS LIST

Table of Contents

Assembly Drawings

REPLACEABLE MECHANICAL PARTS
FORTUNE II

SWITCH ASSEMBLY FEATURE

DESCRIPTION	PART NUMBER
Box Assy, Light, Credit Display	196 067 00
Socket, Bayonet, Mini-Lamp	120 010 90
Lamp, Bayonet, 6.3V .25A	190 011 90
Harn, 1 Switch Vid. Plex	608 059 00
Harn, 5 Switch, Door	608 060 00
Switch, P/B, 2 IN Sq W/O Cap & Plate	516 044 90
Switch Assy, Rect IGT	518 032 00
Cap, Clear, 2 IN Sq	517 100 00
Cap, Clear, Rect IGT	517 098 90
Lamp, Mini, TI 3/4 Edge 6.3V	193 015 90
Lamp, Mini, Wedge 6.3V #86	193 016 90
Switch, Snap/Mini, Pin Plunger	510 103 90
Switch, Snap-Subm, Pin Plunger	510 108 90

VIDEO DISPLAY PANEL

DESCRIPTION	PART NUMBER
Panel, Fluor Lt, Video Display	655 248 00
Socket, Fluor Tube	120 002 90
Ballast, 8W 118V	195 003 90
Socket, Starter	124 002 90
Starter, FS-5 4,6,8W	197 004 90
Lamp, 6 IN Flo, 4W	194 005 90

COIN HANDLING FEATURE

DESCRIPTION	PART NUMBER
Channel Assy 24V Small Coin	642 064 00
Channel Assy 24V Large Coin	642 063 00
Clip, Acceptor Retaining	446 030 00
Solenoid, Crem, 24VAC	459 011 90
Harn, Coin Handling	609 254 00
Solenoid, 24VAC Cont W/Spring	450 017 00
Spring, Con .32 X .63L X .024W	331 024 00

ENCODER/DIVERTER ASSEMBLY, UNIVERSAL

DESCRIPTION	PART NUMBER
Encoder/Diverter Assy, Univ.	575 022 00
Encoder,Diverter, One Piece	575 023 00
Board Assy, PC Encoder	753 033 00
Rod, Pivot-Encoder	664 009 00

All parts and part numbers are subject to change. Please contact IGT Customer Service for updated information when ordering parts.

ENCODER/DIVERTER ASSEMBLY, UNIVERSAL (CONT.)

DESCRIPTION	PART NUMBER
Ring, E, 133-.12 Shaft	447 001 90
Insert, Encoder Diverter, 25¢, 50¢	584 030 01
Insert, Encoder Diverter, $1, $5	584 030 00

ENTRY ASSEMBLY, IKE

DESCRIPTION	PART NUMBER
Entry Assy, Coin, Ike	578 066 00
Filter, Red, Dollar Coin Head	271 012 00
Lamp, 6V, Grain of Wheat	193 017 90
Switch, P/B, SVBM SPST MOM .060	516 047 90
Cap, Switch .250 Dia Nylon Black	517 147 90
Harn, Coin Head	609 294 00

ENTRY ASSEMBLY, 25¢

DESCRIPTION	PART NUMBER
Entry Assy, Coin, 25¢	~~575 075 00~~ 57805900
Lamp, 6V, Grain of Wheat	193 017 90
Switch, P/B, Subm SPST MOM .060	516 047 90
Cap, Switch .250 Dia Nylon Black	517 147 90
Filter, Red, Nondollar Coin Head	271 011 90
Harn, Coin Head	609 294 00

ACCEPTOR ASSEMBLY, DOLLAR

DESCRIPTION	PART NUMBER
Acceptor Assy, Dollar	570 830 00
Acceptor, Mechanism Dollar	570 080 90
Screw, Shldr, #4-40 X .468L	419 910 98
Roller, Reject, $ Acptr	665 011 00
Nut, Lock Esna Thin 4-40	421 001 96

HOPPER

DESCRIPTION	PART NUMBER
Hopper, Low Bases, WSSR, Div. 25¢	795 008 00
Hopper, L.B., W/SSR, Div. NJ Ike	795 015 00
Switch, Snap, Mini, Pin Plunger	510 031 90
Switch, Snap-STD Lever	510 019 90
Harn, Hopper	605 034 00
Relay, OPTO, Assy	454 030 90
Knife, Wldmt, Hopper Lge Coin NJ	585 016 00
Plug 10 Pin W/MTG Flange	217 058 90

All parts and part numbers are subject to change. Please contact IGT Customer Service for updated information when ordering parts.

CHANNEL SPACER

DESCRIPTION	PART NUMBER
Spacer, Channel, Large Coin	674 131 00
Spacer, Channel, Small Coin	674 131 01

SIDE PANEL/HANDLE FEATURE

DESCRIPTION	PART NUMBER
Handle Assy, 25W/Lockout Crm	388 009 00
Switch, Snap, Lever	510 030 90
Solenoid, 24VAC	450 014 90

SOUND FEATURE

DESCRIPTION	PART NUMBER
Tray Assy, 8051 TGM Intfc	597 044 00
Bell Assy, 10V 4IN	228 004 00
Tray Assy, 8051 Intfc Only	597 046 00

UPPER LIGHTING FEATURE

DESCRIPTION	PART NUMBER
Panel, Fluor Lt, Upper	655 239 00
Socket, Fluor Tube	120 002 90
Ballast, 8W 118V	195 003 90
Socket, Starter	124 002 90
Starter, FS-5 4,6,8W	197 004 90
Lamp, 12 IN Flo, 8W	194 007 90

LOWER LIGHTING FEATURE

DESCRIPTION	PART NUMBER
Panel Assy, Lwr Fluor	655 332 00
Socket, Fluor Tube	120 002 90
Ballast, 8W 118V	195 003 90
Socket, Starter	124 002 90
Starter, FS-5 4,6,8W	197 004 90
Lamp, 12 IN Flo, 8W	194 007 90

TOP CANDLE FEATURE

DESCRIPTION	PART NUMBER
Lamp, Bayonet, 7.01V, 63A #63	190 015 90

All parts and part numbers are subject to change. Please contact IGT Customer Service for updated information when ordering parts.

DOOR ASSEMBLY FEATURE

DESCRIPTION	PART NUMBER
Panel Assy, SW/Fuse	655 296 ØØ
Outlet, 125VAC .250 Q-Disc GND	125 Ø1Ø 9Ø
Breaker, Circuit 6 Amp	521 ØØ7 9Ø
Holder, Fuse	213 Ø11 9Ø
Harn, Power Panel	6Ø9 217 ØØ
Switch, Toggle, STD, DPST	511 ØØ8 9Ø
Lamp, Screw, 12ØVAC 15W	19Ø Ø22 9Ø
Fuse, F.B. 3 Amp	524 ØØ9 9Ø
Fuse, F.B. 5 Amp	524 Ø11 9Ø
Filter, Green/Smoke .Ø3Ø Thk	271 Ø14 ØØ
Speaker, 4 Ohms 1W 2 X 6 Oval	13Ø ØØ5 9Ø
Insert, Lg T Diffuser, Coin Tray	584 Ø37 ØØ
Board, PC Brk Out Assy	766 ØØ6 ØØ

POWER SUPPLY FEATURE

DESCRIPTION	PART NUMBER
Power Supply Assy, K-Case	4Ø8 Ø16 ØØ
Filter, Electrical Line, 6 Amp	272 ØØ1 9Ø
Harn, AC Power Supply	6Ø2 Ø44 ØØ
Term, Crp .175 X .Ø79 Pin 16-22 Ga	216 Ø65 9Ø
TFMR, Multi-Winding, Lead	569 Ø54 9Ø
Capr, Disc Ceramic, .1MF, 5ØØV	152 Ø39 9Ø

CARD CAGE ASSEMBLY

DESCRIPTION	PART NUMBER
Cage Assy, Card	64Ø Ø18 ØØ
Board, PC Mother	759 Ø23 ØØ
Switch, DIP, 8 Pos, 16 Pin	51Ø 1Ø5 9Ø
Fan Assy, 3 IN W/HSG 2 Pin IDC	26Ø Ø16 ØØ
Harn, Jumper, Non Prog	6Ø9 26Ø ØØ

COUNTER ASSEMBLY

DESCRIPTION	PART NUMBER
Counter Assy, Five	292 Ø34 ØØ
Counter, 24VAC 6 Digit Total	292 Ø34 9Ø
Harn, Five Counter	6Ø6 Ø22 ØØ
Lens, Counter	659 Ø7Ø ØØ

All parts and part numbers are subject to change. Please contact IGT Customer Service for updated information when ordering parts.

HARNESSES

DESCRIPTION	PART NUMBER
Harn, Main K-Case 8051	601 033 00
Harn, Candle Intercon K-Case	609 253 00
Harn, Monitor Intercon	602 047 00
Harn, Ribn .1 X .1 50P Pol DBL	603 041 01
Harn, AC Door	600 048 00
Harn, Speaker	609 293 00
Harn, Door Optics	609 295 00
Harn, Counter Intercon	609 296 00

REQUIRED PARTS

DESCRIPTION	PART NUMBER
Mount, Door Open Optics	653 099 00
Encoder, Door Open Receiver	575 029 00
Encoder, Door Open Emitter	575 030 00
Cord, Pwr, AC 9FT 10.0 M & 90 DEGF	618 014 90
Tray Assy, 8051 Processor	597 039 00
Monitor 13 IN	699 028 90

IGT SLOT HANDLE

ITEM	DESCRIPTION	PART NUMBER
1	Pawl, Slot Handle	656 014 00
2	Spring, Ext. Pawl	330 039 00
3	Brace, Slot Handle	635 010 00
4	Ring, Push 105-.250 Shaft	447 060 90
5	Cam Assy, Slot Handle	659 055 00
6	Spring, Torsion, Cam	332 008 00
7	Spring, Torsion, Latch	332 014 00
8	Latch, Weldment Assy	650 002 00
9	Dashpot Assy, OPT	599 042 01
10	Ring, E, 133-.62 Shaft	447 037 90
11	Sleeve, Shrink 1 Inch	311 006 90
12	Spring, Ext. Plate Return	330 040 00
13	Spring, Ext., .026ID X .72LG X .022W	330 068 00
14	Knob, Slot Handle 1-7/8 Dia	383 005 90
15	Spring, Rack	339 023 00
16	Nut, Lock Esna 1/4-20	421 011 90
17	Rack, Slot Handle	590 001 00
18	Place Action Assy, Slot Handle IGT	589 112 00
19	Hammer, Sub-Assy, Slot Handle	599 041 00

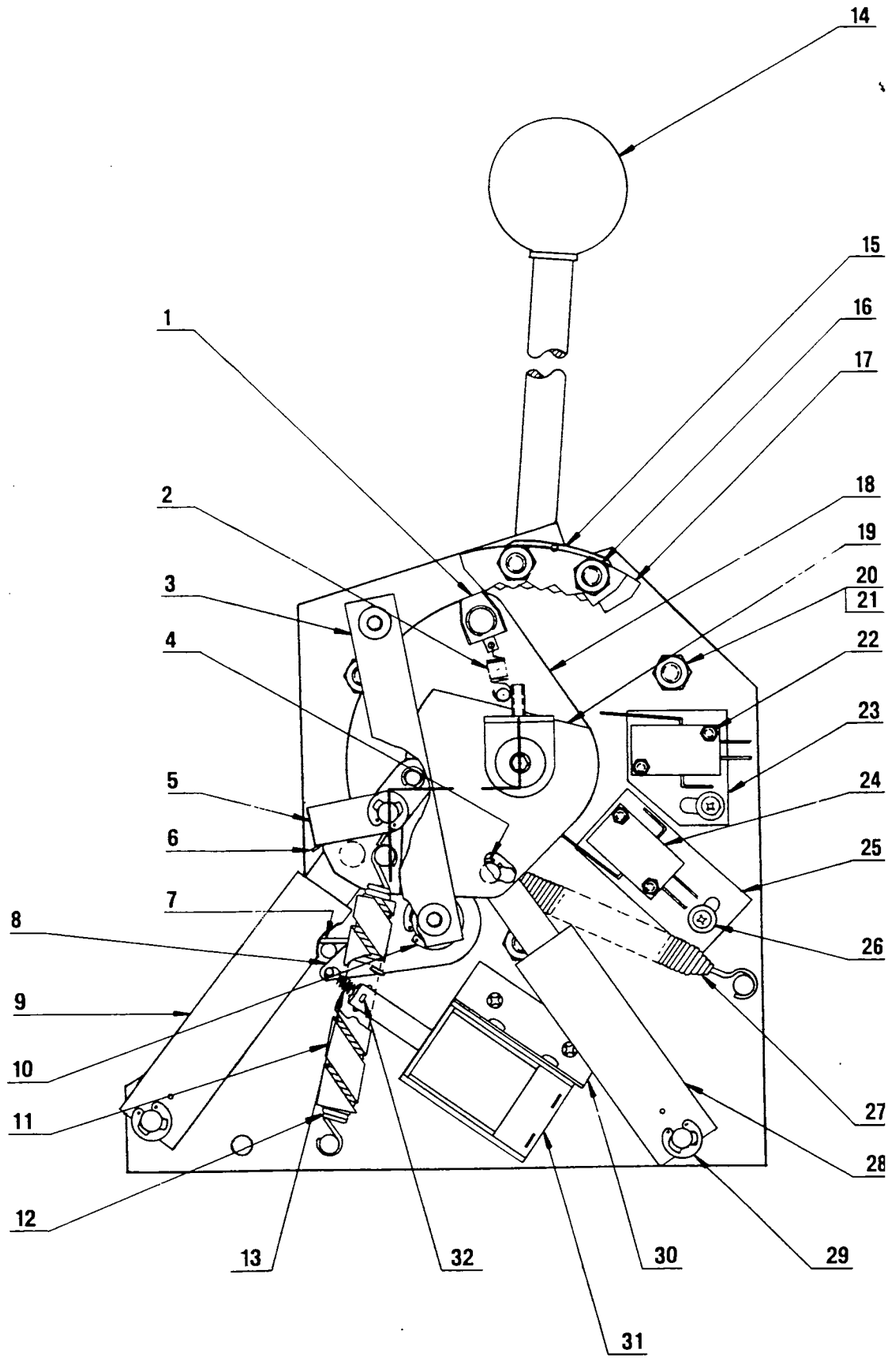
All parts and part numbers are subject to change. Please contact IGT Customer Service for updated information when ordering parts.

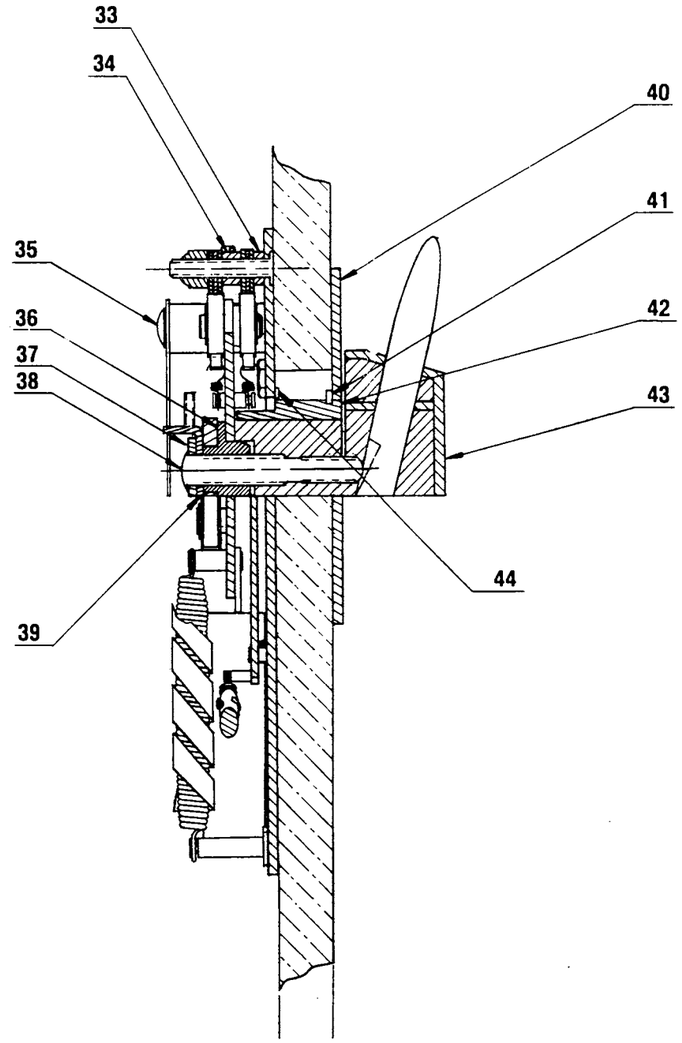
IGT SLOT HANDLE (CONT.)

ITEM	DESCRIPTION	PART NUMBER
20	Bolt, Carr. RDHD 1/4-20 X 1 NI/PT	412 113 95
21	Spacer, AL. RD	674 127 90
22	Nut, Lock Esna 4-40	421 001 95
23	Plate, Switch	589 100 00
24	Switch V10FL-1C244	510 030 90
25	Plate, Lower Switch	589 139 00
26	Screw. Mach PH Pan 6-32 X 3/16	411 003 96
27	Spring, Ext. Cam Return	330 041 00
28	Dashpot Assy	599 042 00
29	Ring, E, 133-250 Shaft	447 040 90
30	Mount, Solenoid	653 070 00
31	Solenoid, 24VAC	450 014 90
32	Pin, Coiter .062 Dia X .50LG	443 006 90
33	Spacer Handle, .257ID X .370D X .145L	674 084 01
34	Spacer Handle .257ID X .370D X .245L	674 084 00
35	Screw, Mach Soc But 1/4-20 X 1/2	413 820 90
36	Spacer, Bushing, Slot Handle	674 082 00
37	Washer, Helical Spring 3/8	439 014 90
38	Screw, Mach Soc But 3/8-16 X 1-1/4	413 810 98
39	Washer, GND Connection 3/8 ID	439 031 00
40	Ring, Slot Handle	663 012 00
41	Ring, BSC, 100-1.75 Shaft	447 039 90
42	Bearing, Slot Handle	399 008 00
43	Handle, Arm Assy, IGT Chrome	388 008 00
44	Washer, Spring	434 004 90

3880 23CC

All parts and part numbers are subject to change. Please contact IGT Customer Service for updated information when ordering parts.





ASSEMBLY DRAWING
IGT SLOT HANDLE

Section VII

SECTION VII
APPENDIX

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COMMONLY USED REFERENCE DESIGNATIONS

C	Capacitor	R	Potentiometer
D	Diode	R	Resistor
DP	Diode Pack	RP	Resistor Pack
F	Fuse	T	Transformer
K	Relay	U	Integrated Circuit
L	Inductor	U	Program Chips
Q	SCR	uP	Microprocessor
	Anode	Y	Crystal
	Cathode		
	Gate		
Q	Transistor or XSTR		
	C Collector		
	E Emitter		
	B Base		

COMMONLY USED ABBREVIATIONS

ACCPT	Acceptor	COL	Column
ASSEM	Assemble	COMM	Common
ASSY	Assembly	COMP	Composition
AUX	Auxiliary	CONN	Connector
BD	Board	COV	Cover
BLK	Black	CPU	Central Processor Unit
BLU	Blue	CRT	Cathode Ray Tube
BRN	Brown	DEC	Decimal
BSHG	Bushing	DEG	Degree
CAB.	Cabinet	DIA	Diagram
CAP.	Capacitor	DIG	Digit
CER	Ceramic	DIP	Dual In-Line Pack
CHG	Change	DISP	Display
C/I	Coin In	ELCTRN	Electron
CKT	Circuit	ELEC	Electrical
CMOS	Complementary Metal Oxide Semiconductor	ELEM	Element
C/O	Coin Out	EPL	Electrical Parts List

EPROM	Erasable Programmable Read Only Memory
EQPT	Equipment
EQUIV	Equivalent
EXT	External
FB	Fast Blow
FLH	Flat Head
GND	Ground
GRN	Green
GRY	Gray
HEX HD	Hexagonal Head
HEX SOC	Hexagonal Socket
HORIZ	Horizontal
HSYNC	Horizontal Synchronize
HV	High Voltage
IC	Integrated Circuit
I/F BD	Interface Board
INC	Increment
INCAND	Incandescent
INT	Internal
INTL	Internal
I/P	Input
IPB	Illustrated Parts Breakdown
J	Female Receptacle
JMPR	Jumper
LASCR	Light Activated Silicone Controlled Rectifier
LED	Light Emitting Diode
LMP	Lamp
L/O	Lockout
LSD	Least Significant Digit
MACH	Machine
MECH	Mechanical
MEG	One Million Ohms
MOV	Varistor
MSD	Most Significant Digit
N/C	No Connection
N.C.	Normally Closed
NEG	Negative
NO.	Number
N.O.	Normally Open
NPN	Negative-Positive-Negative XSTR
OBD	Order By Description
OC	Optical Coupler
O/P	Output
OPTO	Optical Coupler
ORN	Orange
P	Plug-Male
PCB	Printed Circuit Board
PERS	Personality
PL	Place(s)
P/N	Part Number
PNH	Pan Head
PNP	Positive-Negative-Positive XSTR
P/O	Part Of
POS	Positive
POT	Potentiometer
PROG	Program or Progressive
PROM	Programmable Read Only Memory
PWR	Power
PWR SUP	Power Supply
RAM	Random Access Memory
RECT	Rectifier
RED	Red
REQ	Require
REQ'D	Required

RES	Resistor
RET	Retain
RLY	Relay
ROM	Read Only Memory
SB	Slow Blow
SCR	Silicone Controlled Rectifier
SD	Significant Digit
SECT	Section
SEG	Segment
SHT MTL	Sheet Metal
SIG	Signal
SW	Switch
SWS	Switches
SYNC	Synchronize
TERM.	Terminal
TYP	Typical
V	Voltage
V+	Unregulated Positive Voltage
V-	Unregulated Negative Voltage
VA	Unregulated Voltage
V_A	Unregulated Voltage
VAC	Volts Alternating Current
VAR	Variable
VB	Unregulated Voltage
+VB	Positive Unregulated Voltage
V_{CC}	Supply Voltage
VDC	Volts Direct Current
V_{DD}	Supply Voltage
VER	Verify
VIO	Violet
VR	Voltage Regulator
V_{SS}	Supply Voltage
VSYNC	Vertical Synchronize
W/	With
WHT	White
W/O	Without
WSHR	Washer
WT	Weight
XFMR	Transformer
XSTR	Transistor
XTAL	Crystal
YEL	Yellow

RESISTOR COLOR CODE			
COLOR	BANDS 1 AND 2 SIGNIFICANT DIGITS	BAND 3 DECIMAL MULTIPLIER	BAND 4 TOLERANCE
BLACK	Ø	1	
BROWN	1	1Ø	
RED	2	1ØØ	
ORANGE	3	1,ØØØ	
YELLOW	4	1Ø,ØØØ	
GREEN	5	1ØØ,ØØØ	
BLUE	6	1,ØØØ,ØØØ	
VIOLET	7	1Ø,ØØØ,ØØØ	
GRAY	8	1ØØ,ØØØ,ØØØ	
WHITE	9	1,ØØØ,ØØØ,ØØØ	
GOLD	-	Ø.1	±5%
SILVER	-	Ø.Ø1	±1Ø%
NO COLOR	-	-	±2Ø%

UNIVERSAL WIRE COLOR CODE		
NUMBER	COLOR	EXAMPLES
Ø	BLACK	Ø9 - Black Wire with White Stripe
1	BROWN	
2	RED	
3	ORANGE	35 - Orange Wire with Green Stripe
4	YELLOW	
5	GREEN	
6	BLUE	22 - Red Wire with Red Stripe or/
7	VIOLET	
8	GRAY	
9	WHITE	22 - Solid Red Wire